The Chemical Age

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Contents

NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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Dr. Bailey's Retirement

THE retirement, which took effect on Tuesday last, of Dr. T. Lewis Bailey from the important post of Chief Inspector of Alkali Works in England and Wales, is an incident that cannot escape the notice of the industry. Dr. Bailey has been on the staff of the inspectorate since 1908, and since 1920 has been in chief charge of its work. Intimately associated with the heavy chemical industry through all these years, and in frequent personal touch with works in various parts of the country, particularly in Lancashire, as to new processes and problems, he has acquired a thorough and comprehensive knowledge of the industry. This has been shown year by year in the exhaustive annual reports, which rank among our most important industrial documents, and in which, with great care and faithfulness, the chief developments have been regularly noted and discussed. All this is a type of public work that requires both tact and firmness for its right discharge, and the inspectorate, throughout its history, has felt some satisfaction in the cordial co-operative relations that its members have established with the industry. This good tradition has been well maintained throughout Dr. Bailey's period of office and one may be sure it will not be weakened under his successor, Mr. Damon.

In this issue, Dr. Lewis Bailey recounts some of his personal impressions of the heavy chemical industry during his own experience. Among the changes he notes are the disappearance of the old Leblanc process in favour of the ammonia-soda process, and later the introduction of electrolytic methods; the revolution that has taken place in chemical plant design and construction; the many directions in which the original alkali industry has spread its branches and the increase in the number of products now manufactured; the advance in the chemical control of works processes and the corresponding improvement in the position of works chemists; the stricter attention now given to the problem of chemical works effluents and the methods by which public health rights are safeguarded without undue restriction of industrial enterprise. As to what may happen in the next twenty years, Dr. Bailey is too cautious to predict. But everyone will agree with his general conclusion that there can be no standing still.

Growth of Overseas Chemical Trade

A NOTABLE and gratifying feature of the Board of Trade returns for October is that, while national trade continues to expand, the expansion of overseas trade in chemicals, drugs, dyes, and colours is distinctly in excess of the national average. For the month of October, national imports have increased £7,597,551 and national exports £276,812; in the chemical section, imports have increased £639,008 and exports £322,223. Taking the first ten months of this year (January–October) we find an increase in chemical imports of £1,400,050 and an increase in chemical exports of £398,108. How steadily our chemical export trade has grown is shown still more convincingly by comparison with the figures for the first ten months of 1927. The chemical export total of £21,487,511 for 1929 to the end of October is £2,360,822 above the corresponding total for 1927, and £398,108 above that for last year. The returns leave no room for doubt as to the improving position, and justify continued confidence.

Turning to details on the import side, the variations in value generally are not very striking. There is a rather large increase in acetic acid from £47,052 to £98,595; imports of crude glycerine have declined from £17,661 to £185, and of distilled glycerine from £2,171 to £1,807; potassium compounds (excluding nitrate) have advanced from £104,776 to £134,878, while sodium nitrate has dropped from £44,995 to £13,130. The most striking advance is in miscellaneous chemical imports—£237,766 to £794,872. Imports of drugs, etc., are up, and here, again, the chief advance

is in unspecified items—£165,474 to £225,870. Alizarine imports are down from £6,876 to £3,592, but imports of coal tar intermediates stand at £1,875 for the month, compared with nil last year. For the ten months, intermediate imports stand at the rather large figure of £20,308, as compared with £6,744 for the first ten months of last year.

On the export side there is a remarkable increase for the month in sulphate of ammonia from £344,463 to £655,978. This is explained by enormously heavier shipments to Spain and the Canaries, to Japan, and to other (unspecified) countries. Coal tar products, on the other hand, show a serious decline for the month from £198,055 to £151,694; the loss is almost wholly explained by the drop in benzol and toluol exports, from £45,928 to £2,965. Both sodium and potassium compounds are slightly lower, but there are increases in sulphuric acid (£3,250 to £5,063), tartaric acid (£11,571 to £17,456), ammonium chloride (£7,434 to £10,614), bleaching powder (£18,462 to £22,186), and drugs (£278,453 to £339,017, mainly in miscellaneous sorts). Crude glycerine exports are up from £2,118 to £6,374, but distilled are down from £42,107 to £20,448. There are fractional declines on the month in dyestuffs and painters' colours, though the totals in both cases show substantial advances for the ten months. As regards re-exports, part of the heavy decline shown in October (£50,000 as compared with October, 1928) is due to the fact that exports of coal tar products have practically vanished (£50, as compared with £17,901).

Nobel Prizes

SCIENTIFIC workers always attempt to preserve a sense of modesty; but this week British biochemists must find the feat a difficult one. In the last few days, two of their number have been singled out for the greatest of all distinctions—the award of the Nobel Prize. Last week there was announced the award of the 1929 Nobel Prize for Medicine and Physiology jointly to Sir F. Gowland Hopkins, F.R.S., and Professor C. Eijkman. This week comes the news that the 1929 chemistry prize has been divided between Dr. Arthur Harden, F.R.S., and Professor H. Euler.

The work and career of Sir F. Gowland Hopkins were dealt with in these columns last week. Dr. Harden, a Manchester man, was born in 1865. Educated at Manchester and Erlangen, he was for some years a lecturer and demonstrator at the Owen's College, Manchester, before joining the staff of the Lister Institute of Preventive Medicine, where he is now head of the department of biochemistry, with the rank of Professor of Biochemistry in the University of London. For many years, he has been engaged in unravelling the mysteries of fermentation and the action of enzymes, and the award of a Nobel Prize is a fitting tribute to his immense contributions to knowledge. Biochemistry is a young science, and it is a matter for congratulation that two British workers who have been active in its foundation and advancement should receive international recognition at the same time. The award of the 1928 Nobel Prize for Physics to Professor O. W. Richardson, Yarrow Research Professor of the Royal Society, for his work on thermionics, rounds off a very notable week in the history of British science.

Books Received

THE EXTRA PHARMACOPŒIA. By W. Harrison Martindale. London: H. K. Lewis and Co., Ltd. Pp. 760.

ANNUAL REPORT OF THE CITY OF SALFORD ANALYST FOR THE YEAR 1928. By H. H. Bagnall. Pp. 60.

DIE KAKAOBUTTER UND IHRE VERFALSCHUNGEN. By Dr. Heinrich Fincke. Stuttgart: Wissenschaftliche Verlagsgesellschaft. Pp. 238. R.Mk. 20.

DIE OLE UND FETTE IN DER TEXTILINDUSTRIE. By Professor Dr. Herbig. Stuttgart: Wissenschaftliche Verlagsgesellschaft. Pp. 451. R.Mk. 32.

AN ENCYCLOPAEDIA OF THE CERAMIC INDUSTRIES. Vol. I. A-E. By Alfred B. Searle. London: Ernest Benn, Ltd. Pp. 391. 3 gns.

CLIMATE. By Dr. C. E. P. Brooks. London: Ernest Benn, Ltd. Pp. 199. 10s. 6d.

"SELF AND SOCIETY" BOOKLETS. London: Ernest Benn, Ltd. 6d. each.

19. Labrador's Fight for Economic Freedom. By Sir Wilfred Grenfell.
20. Art and Everyman. By Ivor Brown.
21. The Consumer in History. By Professor Elizabeth Levett.
22. Agriculture—Industry's Poor Relation. By G. Walworth
23. Old and New Japan. Dr. Ogata.
24. Capital, Labour, and the Consumer. By Professor Daniels.

ARCTIC AND WESTERN HUDSON BAY DRAINAGE. Water Resources Paper No. 57. Canada: Department of the Interior. Pp. 222.

GASEOUS COMBUSTION AT HIGH PRESSURES. By Dr. W. A. Bone, Dr. Dudley M. Newitt, and Dr. D. T. A. Townend. London: Longmans, Green and Co., Ltd. Pp. 309. 42s.

ECONOMIC AND FINANCIAL CONDITIONS IN JAPAN, TO JUNE 30, 1929. By G. B. Sansom and R. Boulter. Department of Overseas Trade. London: H.M. Stationery Office. Pp. 100. 3s.

THE CHEMISTRY OF LEATHER MANUFACTURE. By John Arthur Wilson. New York: The Chemical Catalog Co. Inc. Pp. 1181. $10.00.

The Calendar

Nov.		
18	University of Birmingham Chemical Society: "The Study of Long Chain Compounds by X-rays." S. H. Piper.	University, Birmingham.
18	Institution of the Rubber Industry (London Section): "The Outlook in the Rubber Industry." H. Eric Miller. 6.45 p.m.	Engineers Club, Coventry Street, London.
18	University of London: "Alchemy and the Alchemists." Dr. Oscar L. Brady. 2 p.m.	London.
19	Institute of Chemistry (Bristol Section): Discussion on the Fertilisers and Feeding Stuffs Act (1926), Opened by Mr. Rowland H. Ellis. 7.30 p.m.	University, Bristol.
19	British Science Guild: Norman Lockyer Lecture. Sir W. Morley Fletcher. 4.30 p.m.	Goldsmiths' Company Hall, Foster Lane, London.
21	Institute of Fuel. Joint Meeting with the Institution of Electrical Engineers: "Low Temperature Carbonisation in Connection with the Production of Electricity."	Institution of Electrical Engineers, Savoy Place, London.
21	Chemical Society. 8 p.m.	Burlington House, Piccadilly, London.
21	Institution of the Rubber Industry: "Unburstable Balls." R. Defries.	Manchester Café, Ltd., Exchange Buildings, Manchester.
21	Institute of Chemistry (London Section): Annual General Meeting and Smoking Concert.	London.
21	Society of Chemical Industry (Birmingham and Midland Section): "Modern Methods of Ascertaining Specific Gravity." W. A. Benton. 6.30 p.m.	Chamber of Commerce, New Street, Birmingham.
22	National Smoke Abatement Society: "Smokeless Fuels." W. Gibson.	College of Technology, Manchester.
22	Streatfeild Memorial Lecture. "The World's Sugar Industry." Mr. L. Eynon.	London.
22	Society of Chemical Industry (Liverpool Section): "Commercial Synthetic Resin Products." Herbert W. Rowell. 6 p.m.	University, Liverpool.

Retirement of the Chief Inspector of Alkali Works

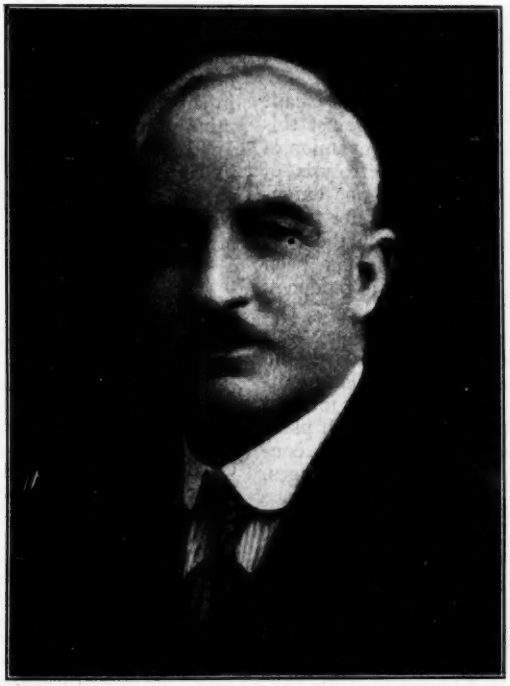
A Chat with Dr. T. Lewis Bailey

THE retirement on Tuesday last (November 12) of Dr. T. Lewis Bailey from the important post of Chief Inspector of Alkali Works marks another stage in the history of the administration of the Alkali, etc., Works Regulation Act. To Dr. Bailey himself, the event brings the feelings natural to the close of an official life and the severance of many personal ties; by his colleagues on the inspectorate and by the officials of chemical works in all parts of the country, with whom his duties have brought him into contact, it is safe to say that his departure is universally regarded with combined respect and regret.

1863 to 1929

Since the first Act was passed in 1863, providing for the Government inspection of alkali works in this country, there have been five Chief Inspectors—Dr. Angus Smith, 1863 to 1884; Mr. Alfred E. Fletcher, 1884 to 1895; Mr. R. Forbes Carpenter, 1895 to 1910; Mr. W. S. Curphey, 1910 to 1920; and Dr. Lewis Bailey, 1920 to the present time.

When the Act of 1863 was passed its operation was limited to alkali works proper, but in the course of 66 years the industry has branched out in numerous directions, and the original Alkali Works Act has become the "Alkali, etc., Works Regulation Act." That "etc." covers changes and developments, technical and industrial, that would make the subject matter of a bulky historical volume. Under the Act of 1906 there have to be registered annually, under "Non-scheduled works," alkali, cement and smelting works; while, under the head of "scheduled works," there are no fewer than 25 classes of works—such as sulphuric acid, chemical manure, gas liquor, nitric acid, ammonium sulphate, chlorine, muriatic acid, sulphide, arsenic, nitrate and chloride of iron, bisulphide of carbon, sulphocyanide, picric acid, paraffin oil, bisulphite, tar, zinc, benzene, pyridine, bromine, hydrofluoric acid, and a few others.



DR. T. LEWIS BAILEY.

This list alone gives some idea of the variety of the industries now covered, the wide extension of the original scope of the inspectorate, and the complexity of the problems calling for attention. In addition to the statutory powers under the Act, and in order to deal with new problems arising from time to time without resort to fresh legislation, powers have now been created whereby the Minister may make orders for extending the schedule after public inquiry, such orders to be laid before Parliament for a specified period.

The Inspectorate and the Industry

It was a natural starting point, in discussing some of these developments with Dr. Bailey, to inquire into the relations between the inspectorate and the industry and to ask if he had noticed any improvement.

"I do not think," Dr. Bailey stated, "that I ought to use the word 'improvement,' for the very excellent reason that the relations between the inspectorate and the authorities responsible for the industry have always been so good. The first chief inspector, Dr. Angus Smith, felt strongly that the relations between the inspectorate and the industry should be based on a friendly and co-operative spirit, and that tradition has been very happily observed from the beginning on both sides.

"The word 'inspector' to many people inevitably suggests interference. Nothing could be further from the spirit in which the Alkali Act and the orders issued under it are administered. The inspector's duty is not to go about finding fault and making trouble; rather it has been, in our case, to assist the management, especially where difficulties arise in connection with new processes and developments, in overcoming them and securing the best possible conditions from the points of view both of the public and of the industry itself. Prosecutions are very rare, firstly, because they need only be resorted to in extreme cases, and, secondly, because the co-operative attitude of the industry fortunately makes it almost entirely unnecessary. Again and again, in our annual reports, acknowledgments have been made of the good relations between ourselves and the works we have to visit, and of the readiness of the companies and their managers to co-operate with the inspectors in their duties."

Thirty-five Years of Change

In the past 35 years, during which Dr. Bailey has been in close touch with the heavy chemical industry, first as University Lecturer in Liverpool, later as an industrialist, and finally, since 1908, as an inspector of alkali works, there have been extensive and important changes. Dr. Bailey has been good enough to give us his views on some of these.

"At the beginning of that period," he states, "the Leblanc soda process was in full swing. Its cycle of operations included the manufacture of soda ash from saltcake and the manufacture of bleaching powder, the latter entailing the production of chlorine by the Weldon, Deacon and other processes. The production of soda ash by the ammonia-soda process had made rapid progress, but the fact that the production of hypochlorites remained with the Leblanc alkali method was greatly to the advantage of the latter. The gradual development of the economic electrolytic decomposition of brine in due course had its effect, so that now the chlorine required for the manufacture of bleaching powder and hypochlorites has its origin in electrolytic methods and the Leblanc soda process may be said to have disappeared. The old black ash furnaces have gone; the Weldon and Deacon chlorine processes are things of the past. Widnes, the great home of the older alkali trade, is a changed place. Saltcake is certainly made, but no longer to the extent prevailing formerly.

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"With change of processes has come quite a revolution in the type of plant used in present day chemical works; in the newer hydrochloric acid plants the old sandstone condensers are replaced by silica condensers. One may say that in many respects modern chemical plant consists of magnified laboratory apparatus; in fact, modern changes are the result of the extension of scientific chemical training during the past generation.

Liquid Chlorine

"Little was known of liquid chlorine as an industrial product until the war period. Its manufacture has now however, assumed very considerable proportions and this has had its effect in many directions. The fact that it can be transported easily has naturally brought about an extension of the use of chlorine for all sorts of purposes. In paper works, bleach works, fine chemical factories, waterworks and so on, it finds extensive use, owing to the fact that it is no longer necessary to manufacture chlorine actually on the spot where its use is required.

"The disappearance of the Leblanc soda process meant reduction in output of hydrochloric acid, but against this may be set now its synthetic production by direct union of chlorine and hydrogen obtained by the electrolysis of brine. Sulphuric acid manufacture has undergone extensive modification; here it is only necessary to refer to the tendency to more intensive working as regards the lead chamber system. Steam for the chambers has been displaced by 'atomised' water and there is a tendency even to use sprays of sulphuric acid in the chambers. The type of lead chamber has undergone modification, also with a view to more intensive working, as instanced by the Mills-Packard type. Opl towers and other similar modifications, too, may be instanced. The old potting method of supplying the oxides of nitrogen has largely given place to the ammonia oxidation method. Sulphuric acid concentration methods, too, have passed through many stages.

Post-War Developments

"Now, since the war period, there has come an entire change in a different direction by the extension of the catalytic oxidation of sulphur dioxide, and so oleum plants are in extensive use.

"One might go on to speak of the enormous alterations in the methods of making fertilisers by the introduction of mechanical dens, the great change in the coke oven industry and the coal gas industry. The recovery of by-products from these industries brings one to think of the advances made in recent years in the synthetic production of ammonia and of nitric acid, but sufficient has been said to show the effect that modern chemical research has had on the heavy chemical trade. What will be the result of the efforts of the next 20 years, who can say? There is no standing still; there can be none."

Increasing Chemical Control

Probably no change has been noted by Dr. Bailey and his colleagues with more satisfaction than the steady increase in the scientific control of chemical plant in recent years, and the more generous recognition of the importance and value of research work. In the annual report for 1928 there is a notable passage:—

"It is abundantly evident that the methods employed in any chemical process cannot remain fixed; there must always be a striving to improve if continued success is to be ensured. The question is not merely how to produce a certain material, but how to produce it most easily, most economically, in the form best suited to the particular purpose for which it is subsequently to be used, always of the exact character demanded, and so on. All this can only be effected by careful chemical control on up-to-date scientific lines, and it entails continued research on the possibility of evolving entirely new methods of manufacture or variations in the existing method. Neither the control nor the research can be done without the man who is equipped by his scientific training to do it, and even he must be given the means for doing it. One wonders why so often the chemist in a works must remain in his laboratory doing routine analyses without being encouraged to follow the details of processes in the works and to suggest modifications; he would, moreover, in such a case take a more lively interest in his work." Step by step, it is satisfactory to hear, the chemist is ceasing to be the laboratory recluse of former days and is taking a more direct part in the control and direction of works processes.

The Perpetual Problem

In the inspection of chemical works, one of the constant and most troublesome problems is that of dealing with effluents. This, of course, has not been finally solved, probably, indeed, never will be, since new forms of industry produce new aspects of the difficulty. But Dr. Bailey has no hesitation in testifying to the great improvements effected in this field and to the sincere efforts made to reduce to a minimum any undesirable public effects.

"In vacating the chief inspectorship," said Dr. Bailey, in conclusion, "it is a pleasure to acknowledge the invariable courtesy and assistance I have received from the whole industry, and I am sure that under my successor, Mr. W. A. Damon, the same happy relations will continue.',

British Tar for Roads

Sir D. Milne-Watson's Appeal

"DESPITE the enormous expenditure of £60,000,000 a year, the roads of the country are still inadequate to meet the growing demands made upon them," said Sir David Milne-Watson, the President of the British Road Tar Association, addressing the second annual meeting in London recently. Of the 2,000,000 tons of tar produced annually in this country, of an approximate value of £4,000,000, only one-third, Sir David said, was used for the purposes of road construction and maintenance on the 180,000 miles of our highways. There was a good case for the increased use of British tar because not only was it a British product, but it was also economical in use, capable of giving entirely satisfactory results and of being laid by unskilled labour under skilled management.

As to the quality of British tar, Sir David said that there might be cited the recent report of the County Surveyor of West Perthshire on the results of tests on nine experimental lengths of road laid fourteen years ago. Of the nine different processes used, the best results were obtained from the sections on which British road tar was used. "It may perhaps be permissible to suggest what is required of a modern road. The motorist, I think, desires a non-skid, resilient and dustless surface; the horse driver, something with a certain grittiness on the surface; the ratepayer something substantial but at the same time economical and durable, and the surveyor a combination of all the foregoing. Road tar can, we are confident, provide the binding material to meet all these demands. Surely it is not too much to ask that a Government, pledged to the reduction of unemployment, should bear in mind when executing its programme that it has in home-produced tar a material that is produced in sufficient quantities to meet all demands. We ask, in fact, that British tar should be used more and more on British roads."

"Empire Hall": New B.I.F. Building

THE new Olympia building in Hammersmith Road, London, which is to be used for the first time for the British Industries Fair next February, is to be called the Empire Hall. It is believed that the Empire Hall will be one of the biggest buildings in the Empire. It is to have four storeys, and its dimensions will be: Length (Hammersmith Road frontage), 330 ft.; breadth, 220 ft.; height, 73 ft. Two floors and the whole of the front of the building will be ready for the coming Fair. The architect is Mr. Joseph Emberton.

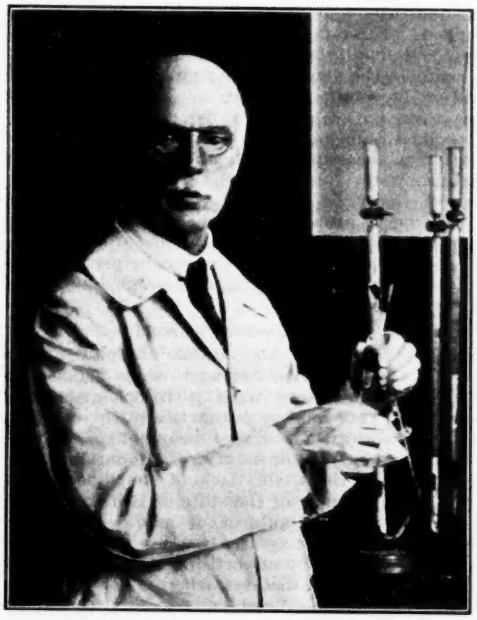
Dr. Arthur Harden: Nobel Prizeman

An Outline of His Biochemical Work

The award of a Nobel Prize for Physiology and Medicine to Professor Sir Frederick Gowland Hopkins, announced last week, is now followed by the award of the Nobel Chemistry Prize for 1929 jointly to Dr. Arthur Harden, F.R.S., head of the department of biochemistry at the Lister Institute of Preventive Medicine, and Professor Hans Euler, of Stockholm. The following appreciation of Dr. Harden's work has been written by a well-known British biochemist.

THE award of a Nobel Prize for Chemistry to Professor Arthur Harden, D.Sc., F.R.S., coming at the same time as the award of a similar prize for medicine to Sir Frederick Gowland Hopkins, is striking witness to the fact that the school of biochemistry in this country is second to none in the world.

Professor Harden, like his distinguished fellow-prizeman, started his scientific career as a chemist. He was a pupil of both Roscoe and Schorlemmer, and his first professional appointment was as a demonstrator in Dixon's laboratory at Manchester. In 1897, he joined the staff of the Lister Institute



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DR. ARTHUR HARDEN, F.R.S., NOBEL PRIZEMAN IN CHEMISTRY, 1929.

of Preventive Medicine, where his pioneer work on the chemistry of fermentation has been carried out.

Enzymes and Fermentation

Harden's first essays in biochemical research were a series of studies on the properties of the enzymes secreted by bacteria, and to these he brought the precision of the skilled chemist. At that time, the accuracy of method characteristic of chemical work was only beginning to be applied to biological problems, and Harden's published papers are to be regarded as foundation-stones in the new school of biochemistry. His work on alcoholic fermentation, largely carried out in collaboration with Dr. Young, brought order and understanding to a difficult problem which had already fascinated many previous investigators and had been a centre of chemical controversy for about 300 years.

Harden started his work at the time when Buchner had first shown that a preparation of yeast press-juice free from cells could initiate the process of alcoholic fermentation in a sterile solution of sugar. This work established definitely the chemical nature of the fermentative agent (zymase) in yeast, and showed that these non-living cell-catalysts had properties which, since the discovery of the yeast cell, had been considered to be essentially the properties of the living cell.

The conditions under which the zymase of the yeast press-juice brought about fermentation were clouded in obscurity when Harden started his work. He concentrated his attention on the early stages of fermentation, and showed that not only the heat-labile colloidal enzyme zymase, but also a heat-stable diffusible co-enzyme had to be present. He showed also that phosphate was an essential chemical component in the series of changes that occur in the breakdown of sugars in alcoholic fermentation, and that in the early stages of fermentation a hexose-phosphate is formed, this body being in its turn decomposed by a specific enzyme, a hexosephosphatase, with regeneration of the phosphate and a continuance of the cycle. Harden and Robison have recently shown that there are several hexosephosphoric acids. The conditions of fermentation determine which of these is formed and influence the equation of fermentation. The utilisation of sugar by the living cell with the formation of hexosephosphate at an early stage of breakdown has now been shown to be characteristic of many tissues, Embden and Meyerhof having demonstrated, for instance, that this type of decomposition occurs in muscles.

Harden's great contribution to the advancement of scientific knowledge lies not so much in the disentangling of a single chain of events, however complicated the story or brilliant the solution. It lies chiefly in the fact that he was one of the first workers to bring the standards of accuracy demanded of chemical work to the study of biological problems. In this way, he is among those who have laid the foundations for the chemical study of cell activities, and have brought reactions formerly considered purely biological under chemical laws. The pioneer work carried out by Harden and his collaborators stands to this day, and forms a base on which the science of biochemistry has been built.

Academic Work and Its Influence

Harden is an outstanding example of an academic man whose researches have had an enormous influence on industry. While preserving his own academic outlook and position, his knowledge has always been freely given to help the brewing and fermentation industries, and he has inspired numerous chemists who are directly employed by the latter. It is well recognised in science that those who give their knowledge to industry, but for themselves retain their academic freedom, see others reap the financial benefits where they have sown the seed. To many people, the award to Professor Harden of the Nobel Prize for Chemistry will seem a just reward for the singleness of purpose which has inspired his scientific career.

Professor Harden has brought to the scientific world abilities as an organiser as well as those of an investigator. During the War, he acted as Deputy Director of the Lister Institute, and carried out work on the anti-scorbutic vitamin in collaboration with Dr. Zilva. He has been the editor of the *Biochemical Journal* since it was acquired by the Biochemical Society in 1912, and here again his wisdom has been freely available to help eager, but not always very critical, Youth.

Euler's Work

Professor Euler, who shares the prize with Professor Harden, was also one of the first workers on the chemistry of fermentation. He fixed his attention mainly on the kinetics of the reaction, particularly in the fermentation of saccharose. He has recently commenced work on vitamins and other biocatalysts. His work has covered a wide field of biochemical problems, and he has published books on yeasts, enzymes and vitamins.

Preparation of a Gram of Rhenium

ONE GRAM OF PURE RHENIUM has been prepared by its discoverers, J. and W. Noddack, from 660 kilos. of Norwegian molybdenite. The work (which is described in the *Zeitschrift anorganische Chemie*, Vol. 183, pp. 353–375), was carried out at the expense of the firm of Siemens and Halske, who also provided accommodation for the purpose in their tantalum works for two months. 77 per cent. of the rhenium contained in the raw material was recovered in the form of the pure metal.

The Sale of Proprietary Medicines

Views of a Public Analyst

In the annual report of the City Analyst of Salford, just published, an interesting statement is made with regard to the manufacture and sale of proprietary medicines. Mr. H. H. Bagnall's statement is reproduced below.

A FEW remarks (says Mr. Bagnall) may be made with regard to the general question of the manufacture and sale of proprietary medicines. It may not be generally known that in this country there is practically no check at all on the sale of such articles. It is open to anyone with enough capital to make up a mixture of drugs (except scheduled poisons) and advertise it as " A's Powders " or " B's Pills," and so on, with accompanying statements to the effect that it will cure or relieve certain diseases, whether the drugs employed are actually useful for the purpose or not. If the name of an ailment is mentioned with the medicine, Government stamp duty has to be paid, but if only the organ of the body which is the seat of the ailment is mentioned, no duty is payable.

For example, " Cough mixture " is dutiable, " Chest mixture " is not; " Headache powder " is dutiable, " Head powder " is not. Subject to this one restriction, proprietary medicines of any description, whether harmful or harmless, whether suitable or not suitable for the diseases they are advertised as being able to cure, may be made and sold with impunity. Nitric acid and water may be sold and has been sold as a cure for corpulency, starch as a remedy for dropsy, insanity, small-pox, etc., and sugar as a cure for drunkenness. A remedy may be recommended by bogus testimonials and by the invented opinions and facsimile signatures of fictitious medical men. It can be sold under any name the " inventor " may choose, and at any price the public can be persuaded to buy. The credulity of the latter seems to be boundless. Any advertisement of a new patent medicine, however absurd its claims, seems to be accepted as truth by large numbers of people.

Four Classes

Proprietary medicines, for practical purposes, may be divided into four classes, always excluding a certain number such as aspirin, acetanilide, which are genuine drugs synthetically produced and sold (under many names) by pharmacological laboratories. 1. This group consists of a number of household remedies, often originally manufactured from a family doctor's prescription, and often beneficial for simple ailments. The retail price is generally out of all proportion to their cost, and large fortunes have often been made by the proprietors. 2. Dangerous remedies and drugs for improper purposes, which should not be sold at all except under a doctor's prescription. 3. Fradulent remedies—a large class with an extensive sale, often at exorbitant prices, consisting of alleged cures for diseases such as cancer, consumption, diabetes, epilepsy, etc. These are sheer and cruel frauds, and their makers deserve the severest penalties. 4. Remedies making grossly exaggerated claims upon which they depend for their sale. Huge profits are made by the makers of the articles in this class.

It will be seen that very little good can be said for the articles in any of these classes, and the suppression of the whole would probably immensely benefit the health of the community.

The Existing Law

The point that needs stressing is that the sale of such articles cannot be prevented under existing law, and the prosecution for the sale of the cod liver oil tablets mentioned above is probably the first of its kind, taken under the Sale of Food and Drugs Acts, which has succeeded. Certain special circumstances were, however, operative in this case. [This reference is to a case in which a summons was issued against a firm for the sale of " Cod Liver Oil " extract tablets which were found on biological investigation to be entirely lacking in vitamins A and D, the most important constituents of cod liver oil. The summons was issued under Section 6 of the Food and Drugs Acts, for selling to the prejudice of the purchaser, cod liver oil tablets which were not of the nature, substance and quality demanded. The defendants were fined £30 and 75 guineas costs.—ED., *C.A.*]

Under Section 6, sub-section 2, of the Sale of Food and Drugs Acts, 1875, and Section 2 of the Food and Drugs (Adulteration) Act, 1928, proprietary medicines are specifically exempted from the provisions of the Act. The wording of this Section is as follows: " No person shall sell to the prejudice of the purchaser any article of food, or any drug which is not of the nature, or not of the substance, or not of the quality of the article demanded by such purchaser, provided that an offence shall not be deemed to be committed where the drug . . . is a proprietary medicine or subject of a patent in force." The reason for this exemption is unknown, but may be guessed at.

In the case of the cod liver oil tablets, the proprietary name was " ——'s Cod Liver Extract Tablets," and had the article been asked for under that name there would have been no case since the purchaser would have got precisely what he demanded. But actually cod liver oil tablets, which is not a proprietary article, were asked for and the proprietary article was supplied. These tablets proved not to be of the nature, substance and quality of cod liver oil tablets, and, in the writer's opinion, the vendors were rightly convicted, although the question of whether the sub-section was still operative in this case was not raised by the defendants.

The special circumstances of this case, however, render it unlikely that in the ordinary way the makers or vendors of a worthless proprietary medicine can be brought to book by the operation of the Food and Drugs Acts. Even if the new Section relating to proprietary medicines were abolished, the Act would still be practically useless, since a purchaser asking for A's pills and getting A's pills would be getting an article of the nature, substance and quality demanded and no offence would be committed.

Better Control Abroad

The Merchandise Marks Act and the Larceny Act are also of practically no value with respect to these articles, and no State Department concerns itself with either their sale or advertisement. This country is practically the only civilised country in the world which has no means of controlling these articles, and in view of the immense amount of harm that may be caused by them, this lack of control is a national disgrace. As an example of the state of British as compared with foreign law on the subject, it may be of interest to mention that one person is said to have made a profit of £60,000 in this country by advertising and selling an alleged vibratory cure for many diseases, whereas for the same procedure in France, he was fined £120 and sentenced to three years' imprisonment.

What is wanted is entirely fresh legislation to deal with the matter. The Ministry of Health should exercise control over the advertisement and sale of all proprietary and patent medicines. The exact formula of them should be furnished to the Ministry, together with a full statement of the claims made, and these should be examined by a competent body of assessors, with power to prohibit or permit in the public interest the sale and advertisement of any proprietary and patent medicines.

The whole of the facts relating to these articles were gone into by the Select Committee on Patent Medicines, in 1912, and a report was adopted which condemned utterly the present lack of supervision, and suggested stringent alterations in the existing law and new legislation of a thoroughgoing kind. Unfortunately, these recommendations have never been carried into effect, but the report is still available and a public service will be done by the first Government acting on its findings.

Food and Drugs (Consolidation) Act

Mr. Bagnall also makes some comments on the new Food and Drugs (Consolidation) Act which came into force this year.

On January 1, 1929, he says, the new Food and Drugs (Consolidation) Act came into force, and this will regulate all future proceedings. It repeals the four previous Food and Drugs Acts of 1875, 1879, 1899 and 1927, and re-enacts their provisions with a few minor alterations. The Margarine Act of 1887 and the Butter and Margarine Act of 1907 are also included in its scope. The consolidation of these various

Acts is, of course, a convenience, but, unfortunately, there are other Acts dealing with food which are not included, and an excellent opportunity has also been lost of bringing up to date the whole of the legislation dealing with foods and drugs.

As I pointed out in my last Annual Report, the conditions are very different now from what they were 20 years ago, to say nothing of 54 years ago, when the first Food and Drugs Acts were passed, the provisions of which still mainly govern the procedure to be taken. The opportunities for profitable adulteration and misdescription are nowadays largely in the hands of wholesale manufacturers, and not to anything like the same extent in those of the small private trader. The original Acts were intended to deal with the latter class, and there is scarcely any provision made for dealing with the big manufacturing firms, who are generally the cause of any trouble which may occur.

No Fresh Matter Introduced

The 1928 Act simply re-enacts, without any material change, the features of the older Acts, and no attempt has been made to introduce fresh matter to make it more possible to get at the actual offenders.

In most cases the makers of an adulterated article which has been bought at a retail shop in a local authority's district have no premises in that district, and a sample cannot be bought directly from them. The only procedure in this case is to take a sample of the article on delivery at the retail shop, either at the request of or with the consent of the retailer. There are obvious difficulties which may be encountered here. It may be necessary to wait a considerable time before the retailer wishes to order another consignment, and meanwhile the makers may get wind of the trouble. In any case, it usually means that a large amount of time is wasted waiting for delivery.

Oversights in the Act

By a curious oversight, the word " drug " has been omitted in the Section dealing with the taking of samples on delivery both in the original Act and in the new Act, and this means, of course, that if a retailer sells an adulterated drug, for which he has no warranty from the wholesaler, there is no means whatever of getting at the latter. The retailer may be perfectly innocent in the matter and may have bought the article in all good faith and sold it in the belief that it was perfectly genuine, yet, under the Act, he is the only person who can be proceeded against. The insertion of the word " drug " in the Section would have made it possible, even if perhaps very difficult, to fix the responsibility on the makers.

There are a number of these oversights perpetuated in the new Act which, if corrected, would have materially increased its value. For example, the definition of butter in Section 34 reads : " The expression butter means the substance usually known as butter, made exclusively from milk or cream, or both, with or without *salt or other preservative.*" This is in direct contradiction to the Preservative Regulations, which forbid the addition of preservative of any kind to butter, and may raise an awkward legal discussion. By this Section also, salt is included as a preservative, but according to the Preservative Regulations, it is not to be regarded as a preservative.

The Labelling of Foodstuffs

One of the most important directions in which the provisions of the Act is lacking is that relating to the improper labelling of foodstuffs. This has assumed considerable importance in the last few years, and is likely to become more important as advertising methods become more " artfully scientific."

The only Section of the Act dealing with this offence is Section 30, which states : " Every person who wilfully gives a label with any article of food or drug sold by him which falsely describes the article sold shall be guilty of an offence." This Section is practically inoperative, since it is generally almost impossible to prove that the label was given wilfully. It would be useful if the word were dropped altogether and the mere giving of a false label made an offence. Manufacturers would be careful in this event to limit the matter on a label to statements capable of substantiation. Some amendment of the law is required to cover the cases of misdescription which are characterised by the judicious use of small type. Statements may be made on a label which may certainly reveal the admixture or the character of the article itself, but the size of the type used for the declaration, or the colour of the label itself, or the part of the label chosen in which to print it, may be illegible at a distance of two or three feet. For instance, in a case coming under the writer's notice, a declaration of admixture was made in letters 2 millimetres long, printed in a purple-red colour on a blue ground. This was practically invisible at a distance of three feet, but a closer examination revealed the fact of its presence, and, legally speaking, it was legible.

The purchaser's attention, however, would undoubtedly be attracted principally, if not solely, by the main declaration on the label, which was in blue letters on a white ground, nearly a centimetre in length. This kind of thing is indefensible, and it should be insisted on by the law that a delcaration of admixture be made in as bold a type as that used for the rest of the description.

Legal Definitions and Standards

Legal definitions and standards for certain foods and compounded articles are also very necessary. So-called " trade custom " has in more than one case allowed the original meaning of the name of an article to become degraded, until, by the trade (but not by the public), the term is construed to mean something very different from what it at first implied. The position has become, in more than one case, as difficult for the manufacturer as for the customer. The better-class makers still endeavour to turn out an article with a composition corresponding to the original meaning of its name, while less scrupulous firms in larger and larger numbers use cheaper ingredients and ingredients foreign to the genuine article. Competition becomes keener and keener, and in many cases the better-class goods are forced out of the market simply because the same name is applied both to the high-class and to the inferior articles, and the public, often with no means of discrimination, naturally select the cheaper one.

This complaint has been made to the writer by numbers of manufacturers who had had to descend to making an article which, a few years ago, they would have scorned to have put on the market. There is no reason why these cheaper goods should not be sold—they are in most cases quite wholesome —but it is distinctly unfair both to the manufacturer and to the public that the composition of them is not declared, and the use of the time-honoured names of the original article not forbidden, without qualification of some sort.

Sampling

Provisions of this sort should be accompanied by a widening of the power of the so-called " sampling officer " so as to enable him to take samples direct from the wholesale dealer or from the makers of an article which is being sold by retail in his district, contrary to any of the provisions of the Act, whether the wholesale dealer or the maker be in his district or not. This would make it impossible, as so often happens at present, for the real offender to escape, simply because he is outside the local authority's jurisdiction. A provision similar to that mentioned has been made under the Preservative Regulations, where the Authority instead of, or in addition to, taking proceedings against the seller may take proceedings against any previous seller, notwithstanding that such sale took place outside the district of the Authority.

The Public Analyst is very often put in a very anomalous position, when he cannot recommend prosecution in cases where it is well deserved, simply because he knows that from the legal point of view there is no case to go on. His aim is to ensure that both the consumer and the honest manufacturer have a square deal, and under the present Food and Drugs Acts this is often literally impossible.

Meeting of the Chemical Society

An ordinary scientific meeting of the Chemical Society will be held on Thursday, November 21, 1929, at 8 p.m. The following papers will be read :—" The Rotatory Dispersion of Organic Compounds. Part XVIII. The Validity of Drude's Equation," by T. M. Lowry ; " The Influence of the Sulphur Atom on the Reactivity of Adjacent Atoms or Groups. Part III. δ- and ε-Chlorosulphides," by G. M. Bennett, F. Heathcoat and A. N. Mosses ; " Studies in the Penthian Series. Part II. Penthian-4-One," by G. M. Bennett and W. B. Waddington ; " Studies in the Penthian Series. Part III. Stereoisomeric Derivatives of some Penthianols," by G. M. Bennett and W. B. Waddington ; " A New Interpretation of the Isomerism Amongst Co-ordination Compounds of Platinum," by F. G. Angell, H. D. K. Drew and W. Wardlaw.

Overseas Chemical Trade in October

Heavy Increases

THE Board of Trade Returns for October indicate that imports of chemicals, drugs, dyes and colours in that month were valued at £1,836,229, an increase of £639,008 on October, 1928; exports were valued at £2,544,020, an increase of £322,223; and re-exports at £76,428, a decrease of £50,128. For the ten months ended October 31, imports were valued at £14,005,998, an increase of £1,400,050; exports at £21,487,511, an increase of £398,108; and re-exports at £799,687, a decrease of £46,044. The detailed returns are as follows:—

Imports

	Quantities Month ended October 31.		Value Month ended October 31.	
CHEMICAL MANUFACTURES AND PRODUCTS—	1928.	1929.	1928. £	1929. £
Acid Acetic .....tons	1,061	2,801	47,052	98,595
Acid Tartaric ....cwt.	2,385	2,424	15,160	16,835
Bleaching Materials ,,	10,284	10,707	8,658	11,243
Borax ..... ,,	4,805	12,011	3,544	6,509
Calcium Carbide .. ,,	91,810	93,547	56,560	57,476
Coal Tar Products value	—	—	9,781	5,703
Glycerine, Crude ..cwt.	10,269	100	17,661	185
Glycerine, Distilled ,,	784	752	2,171	1,807
Red Lead and Orange Lead .....cwt.	3,961	3,743	5,697	5,884
Nickel Oxide ..... ,,	106	44	549	204
Potassium Nitrate . ,,	9,030	8,888	9,302	8,946
Other Potassium Compounds .....cwt.	312,133	580,714	104,776	134,878
Sodium Nitrate.... ,,	90,641	25,778	44,995	13,130
Other Sodium Compounds.....cwt.	43,551	47,125	31,047	34,627
Tartar, Cream of... ,,	3,050	2,760	13,610	12,892
Zinc Oxide .....tons	962	1,138	28,633	34,044
All other Sorts ..value	—	—	237,766	794,872
DRUGS, MEDICINES, ETC.—				
Quinine and Quinine Salts .....oz.	193,506	172,714	13,590	11,534
Bark Cinchona, etc. cwt.	1,955	3,546	10,149	15,916
Other Sorts .....value	—	—	165,474	225,870
DYES AND DYESTUFFS—				
Intermediate Coal Tar Products.....cwt.	—	109	—	1,875
Alizarine ..... ,,	128	170	6,876	3,592
Indigo, Synthetic . ,,	—	—	—	—
Other Dyestuffs ... ,,	3,699	3,845	82,132	74,348
Cutch ..... ,,	2,841	3,847	4,159	6,695
Other Dyeing Extracts cwt.	4,167	2,672	14,380	11,852
Indigo, Natural ... ,,	—	—	—	—
Extracts for Tanning ,,	78,820	67,273	89,049	71,955
PAINTERS' COLOURS AND MATERIALS—				
Barytes, ground, and Blanc Fixe .....cwt.	53,267	65,338	11,986	13,269
White Lead (dry) .. ,,	13,603	15,190	22,231	26,639
All other Sorts ... ,,	99,310	92,593	140,233	134,854
Total of Chemicals, Drugs, Dyes and Colours .....value	—	—	1,197,221	1,836,229

Exports

CHEMICAL MANUFACTURES AND PRODUCTS—				
Acid Sulphuric ...cwt.	6,722	19,777	3,250	5,063
Acid Tartaric ..... ,,	1,703	2,449	11,571	17,456
AMMONIUM COMPOUNDS—				
Chloride Muriate...tons	304	546	7,434	10,614
Sulphate—				
To Spain and Canaries tons	8,761	22,855	81,312	204,505
,, Italy ..... ,,	403	258	3,535	2,349
,, Dutch East Indies tons	306	186	2,944	1,760
,, Japan ..... ,,	11,677	20,693	111,245	190,091
,, British West India Islands and British Guiana tons	541	599	5,126	5,354
,, Other Countries ,,	14,608	27,920	140,301	251,919
Total..... ,,	36,296	72,511	344,463	655,978

	Quantities Month ended October 31,		Value Month ended October 31,	
	1928.	1929.	1928. £	1929. £
Bleaching Powder (Chloride of Lime) .....cwt.	60,473	77,125	18,462	22,186
COAL TAR PRODUCTS—				
Anthracene .....cwt.	—	—	—	—
Benzol and Toluol..galls.	663,894	27,114	45,928	2,965
Carbolic Acid.....cwt.	18,823	17,195	34,136	25,766
Naphtha.....galls.	10,189	3,727	782	465
Naphthalene (excluding Naphthalene Oil) cwt.	10,688	7,247	3,543	2,286
Tar Oil, Creosote Oil, etc. .....galls.	2,253,400	2,902,500	82,557	88,749
Other Sorts .....cwt.	48,257	30,239	31,109	31,463
Total ..... value	—	—	198,055	151,694
Copper, Sulphate of...tons	2,286	783	52,388	18,726
Disinfectants, Insecticides, etc. .....cwt.	45,203	48,836	117,908	119,808
Glycerine, Crude..... ,,	1,273	3,271	2,118	6,374
Glycerine, Distilled .. ,,	13,290	8,054	42,107	20,448
Total ..... ,,	14,563	11,325	44,225	26,822
POTASSIUM COMPOUNDS—				
Chromate and Bi-chromate .....cwt.	1,902	1,007	3,465	2,114
Nitrate (Saltpetre) ,,	1,310	792	2,697	1,509
All other Sorts .... ,,	8,372	7,541	17,311	14,911
Total ..... ,,	11,584	9,340	23,473	18,534
SODIUM COMPOUNDS—				
Carbonate, including Soda Crystals, Soda Ash and Bi-carbonate cwt.	451,149	403,147	128,756	109,944
Caustic..... ,,	168,108	167,888	119,952	107,958
Chromate and Bi-chromate .....cwt.	1,785	3,897	2,461	4,731
Sulphate, including Salt Cake .....cwt.	302,277	296,473	29,962	38,708
All other Sorts .... ,,	66,457	70,100	59,881	65,390
Total ..... ,,	989,776	941,511	341,012	326,731
Zinc Oxide .....tons	112	180	3,954	6,902
Chemical Manufactures, etc. all other Sorts..value	—	—	325,002	376,839
Total of Chemical Manufactures and Products..value	—	—	1,491,197	1,757,353
DRUGS, MEDICINES, ETC.—				
Quinine and Quinine Salts.....oz.	194,277	159,757	19,063	16,130
All other Sorts....value	—	—	259,390	322,887
Total ..... ,,	—	—	278,453	339,017
DYES AND DYESTUFFS—				
Products of Coal Tar cwt.	11,949	13,474	86,070	86,282
Other Sorts ..... ,,	8,091	7,734	10,363	9,399
Total ..... ,,	20,040	21,208	96,433	95,681
PAINTERS' COLOURS AND MATERIALS—				
Barytes, ground, and Blanc Fixe .....cwt.	662	3,994	294	1,748
White Lead (dry) .. ,,	3,432	3,636	6,808	7,784
Paints and Colours in paste form .....cwt.	45,097	39,546	91,153	78,790
Paints and Enamels Prepared (including Ready Mixed) .....cwt.	46,093	52,936	153,135	155,931
All other Sorts .... ,,	56,044	63,098	104,324	107,716
Total ..... ,,	151,328	163,210	355,714	351,969
Total of Chemicals, Drugs, Dyes and Colours....value	—	—	2,221,797	2,544,020

Re-Exports

Chemical Manufactures and Products—	Quantities Month ended October 31. 1928.	1929.	Value Month ended October 31. 1928.	1929.
Acid Tartaric .....cwt.	218	74	1,762	579
Borax..... ,,	808	1,010	675	1,000
Coal Tar Products value	—	—	17,901	50
Potassium Nitrate (Saltpetre) .....cwt.	26	61	30	76
Sodium Nitrate.... ,,	3,475	1,370	1,869	585
Tartar, Cream of... ,,	231	741	1,232	3,750
All other Sorts....value	—	—	22,396	18,967
Drugs, Medicines, etc—				
Quinine and Quinine Salts.....oz.	21,656	17,583	2,357	1,861
Bark Cinchona, etc. cwt.	616	261	5,398	1,137
All other Sorts....value	—	—	36,055	38,555
Dyes and Dyestuffs—				
Cutch .....cwt.	613	1,089	982	2,441
Other Dyeing Extracts cwt.	104	239	1,212	929
Indigo, Natural ... ,,	32	2	1,040	55
Extracts for Tanning ,,	694	1,270	761	1,85
Painters' Colours and Materials.....cwt.	1,796	985	5,212	4,502
Total of Chemicals, Drugs, Dyes and Colours ....cwt.	—	—	126,556	76,428

Tar and Industry

To the Editor of The Chemical Age.

Sir,—As one intimately acquainted with the conditions of our coke and tar industries, I appreciate the vital importance of the recent appeals made by Sir Henry Page Croft, Mr. Will Thorne, and other Members of Parliament, for the use of British tar on British roads. If, under the pressure of a vigorous sales campaign, our local authorities make it a practice to use foreign bitumen as a road dressing in place of British tar, their action will have a very serious effect, through the harm done to some of the biggest commercial buyers of coal, on our struggling coal industry. The gas companies, for example, will find their whole mechanism of production crippled if they lose the home market for their output of road tar. Every penny per gallon received for road tar means £800,000 per annum to the gas industry. If this is lost, the consumer, the gas worker, and the gas companies must all suffer, and the coal industry does not stand to gain from the troubles of one of its best customers.

In the coke oven industry, again, where coal is carbonised to yield crude benzol, sulphate of ammonia, tar and coke, every ton of coal carbonised yields nine gallons of tar. If the tar is sold at, say, 4d. a gallon, this produces a return of 3s. per ton of coal. If, on the other hand, the coke oven industry has its tar left on its hands as a waste product, it will lose the greater portion of this 3s., and be compelled, as a result, to force down the price paid to the pits for coal. Similarly, in the production of steel, the successful sale of road tar as a by-product of the fuel used in manufacture, may actually mean a saving of five or six shillings a ton on the cost of steel—a saving which, in itself, may enable our steel manufacturers to capture foreign markets.

These facts are sufficient to show the enormous importance of road tar to industries which, between them, employ hundreds of thousands of men. As tar, refined to the standard specification of the Ministry of Transport, is to-day our most efficient road dressing, it is difficult to understand why, in so many cases, our local authorities are yielding to the blandishments of the sellers of foreign bitumen, and so sacrificing our own industries. Those who advocate the use of bitumen talk in generalities of the amount of employment given in the few refineries established in this country, but so far they have failed to state how many men are actually employed, as compared with the vast number engaged in established industries which depend, directly or indirectly, on the disposal of tar. Our roads are maintained out of taxes and rates, and it seems folly to spend any part of this money unnecessarily on such a foreign product as bitumen when British road tar is in urgent need of a market.—Yours, etc.,

Philip B. Nicholson.

Wath-upon-Dearne, Yorkshire.
November 4, 1929.

Chemical Salesmanship

To the Editor of The Chemical Age.

Sir,—Colonel Briggs's address on the chemist in industry to the Manchester Section of the Society of Chemical Industry is so stimulating that it deserves the widest publicity.

There is no question at all that there is immense scope for the chemist in the department of salesmanship, but leaving aside technical knowledge of chemistry, other qualities beside those of "a face of brass and the hide of a rhinoceros" are now necessary in the successful salesman. This, from the point of view of the chemist, is very important. Salesmanship is in actual fact rapidly becoming a science, and emphatically calls for the exercise of the highest faculties. This is borne out in an interesting way by the fact that in our experience really successful chemical salsemen, and there are many, are found among the most highly qualified.

The theory about the face of brass and the hide of the rhinoceros exists by reason of the fact that the old-fashioned type of salesman was the wrong type of man. All that is changing. It is the first business of the new salesman to make himself welcome and to employ every resource of applied psychology to do it; the man who can thus apply scientific knowledge is welcome anywhere. That is a matter of established fact.

It is inevitable in these circumstances that salesmanship should attract always a more and more educated type of man. Upon him to a large extent relies the expansion of markets, and he thus holds a key position. Great opportunities exist for chemists in this direction. Salesmanship for the chemist means not only business experience, but increased administrative opportunities.

It has been asserted that salesmanship is a science, and is therefore an appropriate activity for the scientific man to pursue. Like other sciences, however, the theory is one thing and its application another. The chemist, however, trained to apply one science should be able to learn to apply any other; but it is important to remember that application and experience are necessary.

The time is perhaps not far distant when the universities will consider this important question. In America university courses in salesmanship already exist. In this country engineering and salesmanship are becoming more and more closely allied. When chemistry follows the example, another step nearer rationalisation will have been taken.—I am, etc.,

Henry T. F. Rhodes,
Editor, *The Chemical Practitioner*.

British Association of Chemists,
175, Piccadilly, W.1.
November 11.

Chemical Engineer's Claim for Damages

An Agreed Settlement

An action in which Reginald Charnley Burnside, chemical engineer, of Liverpool, claimed damages from the Chemical and Metallurgical Corporation, Ltd., for alleged wrongful dismissal, was settled by agreement last week at the Liverpool Assizes by the payment of £150, including costs. Mr. Burnside was employed at the firm's works at Runcorn as assistant engineer at a salary of £325 per annum on a three years' contract with an annual increase of £25.

Mr. Noel Goldie, K.C. (for Mr. Burnside), said that on January 2 last he was summarily dismissed. The allegation against him was that he was not sober the previous day and interfered with the work of the firm, and that on other occasions he had been unable to do his duty owing to being under the influence of drink.

Mr. Burnside, giving evidence, denied all these allegations.

There was a consultation between the parties, and a settlement was reached. Mr. Goldie, in announcing the settlement, said Mr. Burnside absolutely denied the allegations of intoxication. At the same time he realised that, having regard to the responsibilities which rested upon employers to safeguard their workpeople, the action taken by this company was in accordance with the responsibilities they felt in the matter.

Mr. J. E. Singleton, K.C. (for the company), said the fair manner in which Mr. Burnside had answered his questions made it possible for his former employers to do something they otherwise might not have done. The firm was anxious that Mr. Burnside should be done no harm. Their anxiety was simply to safeguard the interests of their workmen.

Government Department Specifications for Soda Crystals

Regulations Issued by Technical Co-ordinating Committee

The Technical Co-ordinating Committee on Government Stores has just issued pamphlet No. T.G. 24 on Government Department Specifications for General Stores, dealing with "Soda Crystals (Sodium Carbonate, Decahydrate)" (H.M. Stationery Office, pp. 4, 2d.) The regulations appear below.

Compliance with Specification.

1. The soda crystals shall comply in all respects with the specification.

Form, Composition, etc.

2. The soda crystals shall be in the form of clear, colourless crystals, and shall contain not less than 36 per cent. of sodium carbonate (Na_2CO_3).

3. The presence of the following shall be permitted to an extent not exceeding that specified below, viz. :—

		Per cent.
(i)	Water of crystallisation and moisture together	63·0
(ii)	Matter insoluble in water (calculated on the anhydrous material)	0·5
(iii)	Sulphates (calculated as sodium sulphate on the anhydrous material)	1·0
(iv)	Chlorides (calculated as sodium chloride on the anhydrous material)	1·0
(v)	Bicarbonate (calculated as sodium bicarbonate on the anhydrous material)	1·0
(vi)	Iron (calculated as Fe_2O_3 on the anhydrous material)	0·015

Methods of Sampling and Analysis.

4. The methods of sampling and analysis, which are described in the Appendix, are the only methods which will be recognised in case of dispute.

Packing.

5. Unless otherwise ordered, the soda crystals shall be delivered in trade packages.

Appendix—Methods of Sampling and Analysis

The number of packages selected for sampling shall be at the discretion of the inspector. The following procedure applies to each sample so selected.

A representative sample of approximately 1 lb. in weight shall be taken from the selected container. The sample shall immediately be placed in a glass bottle, which shall be securely corked, and kept in a cool place until required for analysis.

(*b*) *Total alkali.*

5 to 10 grams shall be weighed from a stoppered weighing bottle into a flask, dissolved in sufficient distilled water and titrated against N I acid, using methyl orange as indicator. A correction shall be applied for the proportion of bicarbonate present in the sample and the difference shall be considered to be sodium carbonate and calculated as Na_2CO_3.

(*c*) *Water of crystallisation and moisture.*

3 to 5 grams shall be weighed from a stoppered weighing bottle into a tared covered crucible. The crucible and cover shall be heated first in an air oven at 120° C., and finally over a low bunsen flame until all the water has been driven off. The crucible and cover shall then be weighed. The loss in weight of the material shall be corrected for the small proportion of bicarbonate present in the sample.

(*d*) *Matter insoluble in water.*

50 to 100 grams shall be weighed and dissolved in distilled water. The solution shall be filtered through a Gooch crucible and the insoluble matter shall be washed thoroughly with water, dried at 100° C., and weighed.

(*e*) *Sodium sulphate.*

Approximately 50 grams shall be weighed and dissolved in distilled water; the solution shall be made faintly acid with hydrochloric acid free from sulphuric acid, and filtered. The filtrate shall be heated to boiling, and to it a slight excess of a hot solution of barium chloride shall be added drop by drop. The solution shall be allowed to stand overnight. The precipitated barium sulphate shall be collected, washed, dried, ignited gently, and weighed.

(*f*) *Sodium chloride.*

Approximately 20 grams shall be weighed, dissolved in distilled water, and the solution shall be made slightly acid with nitric acid free from chlorine. The solution shall be filtered, and to the filtrate a slight excess of an approximately N/10 solution of silver nitrate shall be added. The precipitated silver chloride shall be collected on a Gooch crucible, washed with water, dried at 150° C., and weighed.

(*g*) *Sodium bicarbonate.*

Approximately 25 grams shall be heated at 200° C. until all the carbon dioxide has been given off. The carbon dioxide shall be absorbed by a suitable absorbent and weighed. A convenient form of apparatus is given in the accompanying sketch.

(*h*) *Iron oxide.*

25 to 30 grams shall be weighed out and dissolved in iron-free water in a beaker made of resistant glass. The solutions shall be acidified with iron-free hydrochloric acid, taking care to avoid loss, and shall then be boiled until any particles of iron, or iron oxide, which may be present, are completely dissolved.

The solution, after being allowed to cool, shall be transferred to a 250 milli-litre standard flask, and shall be diluted to the mark with iron-free water and well mixed. For each determination, 25 milli-litres of the solution shall be transferred to a 100 milli-litre Nessler cylinder made of good quality glass, and shall be diluted to about 60 milli-litres, and three or four drops of thioglycollic acid added.

Strong ammonia solution (0·88 S.G.) shall be carefully added until the reddish-purple colour just appears; 0·5 milli-litre of strong ammonia shall then be added in excess, the solution shall be diluted to 100 milli-litres and well mixed. The colour obtained shall be then matched against a standard solution, containing 0·00001 gram Fe_2O_3 per milli-litre, prepared by dissolving the correct amount of ferrous ammonium sulphate in distilled water.

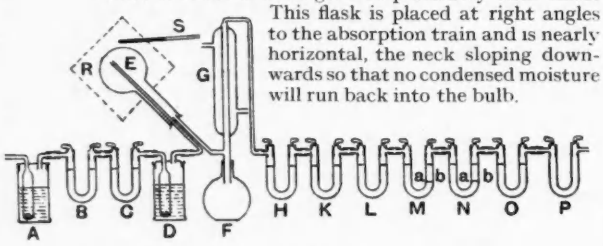
Apparatus for the Estimation of Sodium Bicarbonate in Soda Crystals

A Bubbler containing conc. sulphuric acid.

B, C } U tubes containing soda-asbestos.

D Bubbler containing conc. sulphuric acid.

E Round bottomed flask of about 100 milli-litre capacity, fitted with ground-in stopper carrying two tubes, one reaching nearly to the bottom of the flask, the other just passing through the ground connection. The whole is made of hard glass or preferably clear silica. This flask is placed at right angles to the absorption train and is nearly horizontal, the neck sloping downwards so that no condensed moisture will run back into the bulb.



F Short-necked flask of about 150 milli-litre capacity in which condensed moisture from E collects. The water is boiled towards the end of the experiment.

G Short water-cooled reflux condenser.

H, K } U tubes containing conc. sulphuric acid.

L U tube containing phosphorus pentoxide.

M, N } U tubes filled as follows :—(*a*) Soda asbestos. (*b*) Phosphorus pentoxide. On each side of the phosphorus pentoxide is a plug of *glass* wool.

O U tube containing phosphorus pentoxide.

P U tube containing conc. sulphuric acid. This is connected to a pump which draws air through the apparatus at the rate of 10 to 15 litres an hour.

R Asbestos box, heated by bunsen burner.

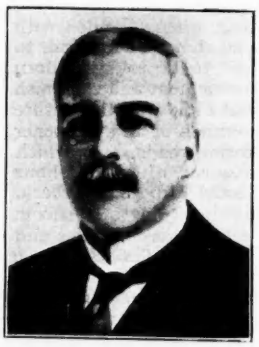
S Thermometer.

The tubes M, N and O are weighed before and after the experiment.

Royal Society Medallists

Professors Planck and Lewis

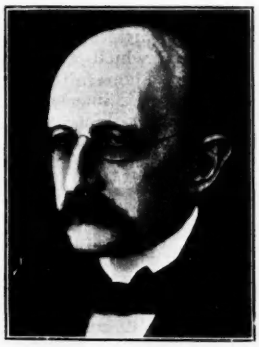
AMONG the awards of medals just made by the president and council of the Royal Society are the Copley medal to Professor Max Planck and the Davy medal to Professor G. N. Lewis.



PROFESSOR G. N. LEWIS.

Professor Gilbert Newton Lewis, of California University, has made numerous contributions to thermodynamics and the theory of valency. He was the first to put forward the Octet Theory of atomic structure, the basis of which is the arrangement of an outer shell of eight electrons round the atom. In the hands of Professor Lewis, Dr. Langmuir and others, this view has shed a great deal of light on a number of points in regard to valency which formerly were inexplicable.

Professor Max Planck, of the University of Berlin, was the originator of the quantum theory. This has proved remarkably fruitful, having had important effects on many phases of physics and chemistry, including the structure of the atom (where it was the basis of Bohr's theory), photochemistry (where it was applied by Einstein), etc. He is a Foreign Member of the Royal Society.



PROFESSOR M. PLANCK.

Sir Ernest Rutherford, the present president of the Royal Society, is recommended for re-election, and among other recommendations are Dr. F. E. Smith, F.R.S. (secretary of the Department of Scientific and Industrial Research), as secretary; and Sir Frederick Hopkins (Cambridge University), Dr. W. H. Mills (Cambridge University) and Professor J. C. Philip (Royal College of Science) as members of council.

Science and Legislation

By W. P. Dreaper, O.B.E., F.I.C.

THE formation of a Science Party in this country, which would function in similar ways to the existing political parties, and would appeal for support directly to the electorate, was suggested in 1912 (*Chemical World*, Vol. I, page 1) by the writer.

This party, "being directly represented in both Houses of Parliament, will watch and influence legislation on scientific lines." The Upper House was included in this suggestion in order that when the time comes for the Upper House to be reorganised on more modern lines, representatives of science should already be present and directly influencing legislation in that House, and therefore in a stronger position to demand further recognition in the reconstructed House; possibly, through the inclusion in its membership of a few of the presidents of leading scientific societies.

Although it may be said with some reason that a country cannot be run on sectional lines, so far as legislation is concerned, and that this, in itself, should prevent a Science Party actually being in the saddle, yet it is held that a small party devoted to science, and securing its membership in the House of Commons through actual appeal to the electorate, would be a considerable advantage to the State, and be the best means of constantly keeping the aims of science before the country. Undoubtedly, also, there should be a far greater proportion of scientific men engaged in the deliberations of the Upper House under modern conditions. Again, the Upper House would probably be better able to devote its time to the consideration of special legislation initiated by science than the overworked Lower House.

Further inquiry, however, seemed to point to the impossibility, at that time, of forming a Science Party on the lines indicated, and the more immediate formation of a Science Committee consisting of existing members of the House of Commons was advocated generally in the Press over a number of years. This is, of course, a simpler matter.

Collaboration with Dominions

More recently, I have urged that this system of Scientific Committees should be extended, as soon as possible, to the Dominion Houses of Assembly, and that in time these separate committees might correspond, and work together for the good of the Empire as a whole. The vision of science working in this way is an inspiring one, and particularly useful in a widely-spread Empire such as ours. It could hardly fail to give our investigators a definite aim in their research, and lead to the more practical utilisation of our raw materials, to the discovery of others, and to the extension of supplies whenever possible, in cases where these are not fully adequate and sufficient for present needs.

The problem of unemployment could certainly be eliminated were a general programme of development worked out on scientific lines and hammered home in the Houses of Assembly. Few accuse scientific workers of being self-interested; and undoubtedly concerted action in the different parts of the Empire, by such Science Committees, would lead to more efficient ways of utilising our surplus labour, by co-ordinating this with our supplies of raw materials. This could be settled without interfering with local interests. Science can undoubtedly bring into being methods of dealing satisfactorily with this important and essential part of our work. We should work for a time when it would be impossible to find a large body of men unemployed, while there was so much work still to be accomplished for the common good of the Empire and mankind.

The Future Programme

The possible means of working to the desired end may be summarised as follows:—

(1) The formation of Science Committees in both the Houses of Parliament, of which one has recently come into existence in the House of Commons.

(2) The extension of this programme to the Dominions.

(3) The formation of a Science Party working on similar lines to the other political parties in this country, by direct appeal to the electorate.

(4) Joint action on the part of any existing Science Committees in different parts of the Empire for purposes of unified endeavour and general co-operation.

Science holds a unique position in modern civilisation. Its appeal and its benefits are universal. Yet a programme set up within the Empire, under which the scientific workers of the Empire would be inspired by common work for its full development, would be a fine thing, and an example to the world at large. The long and organised team work entailed, as this would generally be co-ordinated through the Science Committees of the Empire, would have invaluable results. No other organisation could possibly deal so efficiently with local unemployment, or suggest so surely means of overcoming it. It cannot be denied that progress in this direction is at present somewhat slow. Science could certainly lubricate the wheels.

General Progress

Much matter is waiting for science to handle in its own particular way. By a process of discovery, invention, and then economic progress, its advance is unrivalled. It offers the world an easier path to travel; longer life, and power that this may be more fully realised. It lays bare the powers of nature, and leads to their employment in the needs of man. It presents the beauty of nature in a new guise, complementary to that presented by art. It works for general advancement, and the good of all. And, undoubtedly, if this urge be brought within the realm of political life, nothing but good can result. Science hates the inefficiency of war. It has the well-being of man as its first consideration.

Pitch Consumption in Briquet Manufacture

ACCORDING to official statistics, the 53 active briquet plants in Belgium in 1927 used 152,440 metric tons of pitch, of which 84,130 tons were imported. The consumption of pitch per ton of briquets was 90·3 kilos.

Scandinavia as a British Market

By Sir Ernest Benn

AFTER six strenuous weeks spent in an endeavour to see something of Scandinavia and the Baltic States, I come back to London convinced that here is a market whose possibilities are all too little realised by the British business classes.

I accepted the invitation of the Economic Club of Copenhagen, of the Anglo-Norse Society, the British-Swedish Society, the British-Finnish Society, and the Anglo-Latvian Club to lecture. I was also entertained by Chambers of Commerce at Abo, Helsingfors, Riga, and Copenhagen. I attended functions of several other trade associations, and in this way established a contact with commercial people, securing a very valuable insight into their methods and their affairs.

To begin with, all these people from Copenhagen to Imatra look English. You feel at home among them. You do not get that peculiar sense of the foreigner which is usually associated with travel abroad. When I walk about the streets of Bucharest or Madrid or even Paris, I see people that look to me peculiar. I try to picture them walking down the Strand and to think how noticeable they would be, but with the Scandinavians all such sensations are absent. You walk up to a total stranger in the streets of Stockholm or Oslo to enquire the way, and it strikes you as extraordinary if you find that he cannot speak English. The point is perhaps a small one, but it made a great impression upon me. These northern peoples are of the same stock as ourselves; their build, their walk, their appearance look much like ours, and all that helps even in business.

Good Linguists

Almost all these people speak two languages; some of them like the Finns, speak three or four, for it is the exception to find a Finnish shopkeeper who has not got a smattering of Russian, does not speak Swedish and Finnish fluently, and who will not at the same time converse with you in English or German.

Looking at the matter as a publisher, I find in this part of the world a definite competition between German and English for supremacy as the common language, for all these people have to develop a common language. The new nationalism, that extraordinary phenomenon which has spread over Europe since the war, has thrust upon each of them the keen desire, such as we see in Ireland, to develop their own peculiar native language. Thus we get one million Estonians, three and a half million Finns, two million Latvians, six million Swedes, three million Norwegians, and three and a half million Danes, all clinging to abstruse methods of expression which they love, but which they frankly recognise as unsuitable for communication with the outside world. So that all these little peoples have thrust upon them, as it were, the necessity for speaking the language of one of the bigger races of mankind.

There is another general consideration. All these peoples are very similar to the English in their habits. It is true they are still a long way behind the English home. They live, like most of the Continentals, in flats. But the Scandinavian flat is a good deal nearer to the English home than the German flat or the French apartment. They suffer from a climate which is similar to ours; they have our long evenings in the winter time, and they share to the full—and here I had many opportunities for observation—the Englishman's love of household gods and home comforts.

On the practical side, trade between Great Britain and Scandinavia would seem to be easy. There are the usual difficulties of customs and passports which apply now to every part of the world, but transport is cheap. While the commercial traveller may not relish the idea of 36 or 48 hours on the North Sea, a case of goods is presumably above such considerations as sea-sickness. There are a dozen regular lines and scores of other easy shipping communications, English, Danish, Swedish, Norwegian and Finnish shipowners all competing for the trade. A parcel of goods can be sent from London or Hull or Newcastle to Stockholm or Helsingfors or Vyborg much more cheaply and almost as expeditiously as from Falkirk to Bristol.

To me, a woefully ignorant Londoner, the surprise of my tour was the entry one after another into big, fine, highly developed cities. It is, perhaps, a very unfortunate confession for me to make, but I did not expect to find an underground railway at Oslo, nor was I anticipating, when I landed with some trepidation at Abo, on the rugged shores of Finland, to receive an invitation for dinner and to be told to adorn myself in a white tie and tails. The refinement and the finish of Stockholm, which equals any city that I know for the culture and the comfort of its life, was not so much of an eye-opener to me, but the presence of fine motoring roads, over which I was carried in a £3,000 Hispano-Suiza car, after a ten-hour railway journey into what I had expected to be the barbaric hinterland of Finland, came to me as something of a shock. Of the dozen cities which I visited, each possesses miles and miles of fine shops, prominent among them florists' shops, which somehow seem to me to be rather the key to the whole situation. I have bought flowers in Bond Street and paid through the nose for them, but Bond Street has nothing to teach the leading shopping centre in Vyborg.

Everywhere I went the building trade was active. In Helsingfors alone there has been over-building, causing a reaction. Scandinavia, having escaped the war, never ceased building, and all these countries have been saved to a very large extent from the devastating activities of municipalities in this direction. The result is that nowhere is there any shortage of housing accommodation. The housing of the people is going raipdly up the scale;

On closer inspection I find the old story, the same degrading experience which awaits the Englishman who travels and enquires. Shops full of German goods, factories full of German machinery. I inspected several factories, printing, bookbinding, saw-milling, paper making, pulp works, pottery works, electrical power stations, to name only a few. Swedish engineering, as might be expected, gets a very good show in most of the factories, but Germany holds the field.

Interesting Trade Figures

Mr. A. H. Saastamoinen, the Finnish Minister in London, writing to *The Times* on October 31, says that for every English traveller visiting his country, Germany sends twenty-five representatives. My observations and the figures both support this disconcerting view. Looked at in a broad way the facts are very simple. The countries which I have named sell raw materials to us and buy their finished products from Germany. We depend upon them to a very large extent for our butter, our bacon, our eggs, and our timber. They depend upon us for next to nothing. The following table gives the figures in millions and shows that we buy from the territory which I covered nearly four times as much as we sell.

	Average Annual Exports to Great Britain.	Average Annual Imports from Great Britain.
Denmark	50 million	10 million
Norway	13 ,,	7½ ,,
Sweden	25 ,,	10 ,,
Finland	16 ,,	3½ ,,
Estonia	2¼ ,,	¾ ,,
Latvia	6 ,,	1½ ,,
	112¼ million	33¼ million

The remedy to me is very simple. It is for British commercial travellers to take a trip to Scandinavia.

I crossed the Gulf of Finland in a gale, and was assisted across the rather slippery deck of the diminutive steamer which makes the daily journey by a young Czeck who spoke the most perfect English. We struck up an acquaintance. He is the traveller for the Baltic States of a firm of jewellery manufacturers in Prague. He covers all the territory from Lapland to the Polish border, and he does the trip every three months. I gathered from him that the Finns pay their accounts on the nail, the Estonians are not quite as good, the Latvians want a little more attention from the counting house, while in Lithuania and Poland it is wise to ask for cash against delivery. This little ship had about twenty-five passengers on board and I questioned the captain about them. He assured me they were all commercial people and that his passenger traffic was nearly all German.

The Profession of Chemistry

An Address by Mr. R. B. Pilcher

AN address on "The Profession of Chemistry" was delivered by Mr. R. B. Pilcher, registrar and secretary of the Institute of Chemistry, on Tuesday, at the Sir John Cass Technical Institute.

This, said Mr. Pilcher, is the only country where any confusion about the word "chemist" exists, although there is no confusion about the word "chemistry," and in speaking of the profession of chemistry I mean the science which deals with the constitution of matter and its behaviour under various conditions.

The confusion over the word "chemist" is an old one, since even as early as 1667 Bishop Spratt recognised three kinds of chemists. One of these, "such as seek and prepare medicines," must be regarded as the forerunner of the manufacturing chemist of to-day, and it was from these and the "druggist" (dealers in galenicals) that the apothecary (modern pharmacist) obtained his supplies from which to dispense medicines ready for use. It was the gradual union of the functions of the "chemist"—*i.e.*, the supplier of medicines of mineral origin, with those of the "druggist"—*i.e.*, the supplier of medicines of vegetable origin, that resulted in the composite trade of "druggist and chemist," for what should properly be called "pharmacist" or "apothecary."

The Invisible Work of the Chemist

Until comparatively recent years, chemistry was a hobby for the nobility and men of leisure, but nowadays there are few industries which do not depend on the chemist's skill, although the work of the chemist is less obvious and less understood than that of many professions. Thus the work of the engineer is constantly in view in the form of bridges, engines and machinery of all kinds, but the engineer depends on the chemist for the special steels and other alloys which render his work possible, and in the same way advance in medical knowledge only follows on the pioneer work of the chemist. Food, clothing (including artificial silk), gas, water and almost every other product is now manufactured or distributed under chemical control, and every year the farmer becomes more dependent on the chemist for his fertilisers.

To be a good chemist a broad foundation of culture is essential, and the chemist should also be acquainted with the literature of other branches of science, as sciences so overlap that it is impossible to practise one without a useful knowledge of others.

Various Branches

Really good research chemists are rare, and the student who is so fortunate as to have the opportunity of working with one should make the best use of it. But not every chemist is destined to be a research worker, and there are many good openings for competent chemists outside the research laboratory. In industry, chemists are required for the analytical control of material bought and sold, and for the control of manufacturing operations. Government departments and municipal bodies provide appointments for many chemists, and private practice as analytical and consulting chemists holds many attractions for those who have sufficient financial resources to enable them to build up a clientèle or to buy a practice.

Whether men work with their heads or their hands or with both, they have found some form of organisation to be desirable, and the Institute of Chemistry, which was founded in 1877 and received its Royal Charter in 1885, is the organisation of the professional chemist, and from a small beginning has grown into a large and powerful body, which, among other activities, lays down the qualifications desirable for those who wish to practise chemistry.

American Paint Products to Argentina

ARGENTINA, which ranked as the fourth largest buyer of American paint products for the first half of this year, continues to consume large supplies. Eight months' export figures attained a total value of $976,000, a gain of over $300,000, as compared with last year. Notable increases were enamel paints, $137,593; nitrocellulose and other lacquers, $140,528; ready mixed paints, $557,837; oil varnishes, $49,566; and paint specialties, $104,123.

New Waynflete Professor

Professor Robert Robinson Elected

PROFESSOR Robert Robinson, F.R.S., head of the department of organic chemistry at University College, London, since 1928, has been elected to the Waynflete Professorship of Chemistry in the University of Oxford, which was rendered vacant by the recent death of Professor W. H. Perkin, F.R.S. Professor Robinson was born in 1886. He was educated at Fulneck School, near Leeds, and Manchester University, where he carried out chemical research under Professor W. H. Perkin. In 1912 he was elected professor of organic chemistry in the University of Sydney, whence he returned to England in 1915 to become Heath Harrison professor of organic chemistry at Liverpool University. He was appointed director of research to the British Dyestuffs Corporation, Huddersfield, in 1920, and in the following year became professor of chemistry at St. Andrews University. From 1922 to 1928 he was professor of organic chemistry in the University of Manchester, leaving to accept the chair of organic chemistry at University College, London.

Professor Robinson has carried out a large amount of research on organic chemistry (most of which has been published in the *Journal of the Chemical Society*), and is an eminent authority on the chemistry of the alkaloids and the natural colouring matters.

China Clay Exports—October, 1929

A RETURN showing the quantities and values of the exports of China Clay (including Cornish or China Stone), the produce of Great Britain and Northern Ireland, from Great Britain and Northern Ireland, as registered in the month of October, 1929, is as follows:—

COUNTRY OF DESTINATION.	QUANTITY. Tons.	VALUE. £
Finland	25	103
Estonia	266	492
Latvia	304	750
Sweden	1,827	4,070
Norway	829	1,245
Denmark	2	16
Germany	3,466	6,972
Netherlands	4,520	10,281
Belgium	3,955	7,929
France	4,115	7,534
Switzerland	125	267
Portugal	5	20
Spain	1,140	2,719
Italy	1,904	5,018
Greece	10	60
China	1	8
United States of America	17,454	39,845
Cuba	11	82
Chile	21	100
Uruguay	1	8
Argentine Republic	10	68
Union of South Africa	2	25
British India, via Bombay	1,828	5,012
Via Madras	9	39
Via Bengal, Assam, Bihar and Orissa	331	1,373
Australia	24	232
New Zealand	5	27
Canada	51	204
Newfoundland and Coast of Labrador	1,087	3,568
Total	43,928	98,067

China Clay Imports—October, 1929

A RETURN showing the quantities and value of China Clay, including China Stone, imported into Great Britain and Northern Ireland, as registered in the month of October, 1929, indicates that the imports (all from France) were valued at £9.

New Benn Books

AMONG the books to be published shortly by Ernest Benn, Ltd., are the following: *Filtration and Filters*, by J. A. Pickard. (45s.). *Blast Furnace Practice*, Volume 3, by Fred Clements. (£3.3s.). *Timber Trades Lectures*, 1928–1929. (5s.). *Chats on Old Furniture*, by Arthur Hayden. (10s. 6d.).

Chemical Matters in Parliament

Beet Sugar Effluents

In the House of Commons, on November 7, Mr. Everard asked the Minister of Health whether any steps were being taken to ensure that the most up-to-date methods of dealing with the effluent of sugar-beet factories were utilised. Mr. Greenwood replied that pressure was brought to bear on those managing beet-sugar factories to secure proper methods of purification, and improvements had been effected. Experiments had been conducted in certain works for some time under the auspices of the Department of Scientific and Industrial Research in co-operation with the industry, and, while those experiments were not yet concluded, they gave ground for anticipating that a method would be devised which would render possible satisfactory purification at reasonable cost. In reply to a further question, Mr. Greenwood said that he would look into the systems already in operation at Bury St. Edmunds and Yorkshire with a view to making them standard for the rest of the country.

River Pollution

Dr. Addison, in reply to a question by Mr. Everard (House of Commons, November 7), regarding pollution of the River Whitham at Bardney and the River Nene at Peterborough, said that no official communication on the subject had been received from the fishery boards concerned. He pointed out that these bodies themselves, and not the Ministry, had power to take action under the Salmon and Freshwater Fisheries Act, 1923. It was understood that in the first case referred to proceedings were to be taken by the fishery board, and that in the second the matter was being discussed with the owners of the factory held responsible.

Artificial Silk

In the House of Commons, November 7, the Minister of Labour stated, in answer to a question by Mr. Remer, that the estimated number of insured persons, aged 16 to 64, classified as belonging to the silk and artificial silk industries in Great Britain was 73,480 at the end of June, 1929, as compared with 45,300 at the end of June, 1925. Corresponding figures for October 1 in each of these years were not available. The number of such persons recorded as unemployed was 6,435 at September 23, 1929, as compared with 3,285 at September 21, 1925. The Minister consented to consider the use of the word "rayon" instead of "artificial silk."

Artificial Silk Factory Health Conditions

The Secretary of State for the Home Department informed Mr. Kelly (House of Commons, November 7), that the health conditions in artificial silk factories were under close supervision. One prosecution had taken place during the last six months, the offences being failure to ventilate the churns and failure to notify cases of poisoning by carbon bisulphide. Substantial penalties were imposed.

Aniline Factory Workers

Mr. Clynes, in anwer to an inquiry by Mr. Philip Oliver (House of Commons, November 7), stated that he was arranging for the co-operation of the Medical Inspectorate of the Factory Department in the investigation of the industrial history of cases of the disease of cancer of the bladder among workers in aniline factories.

Dead Sea Salts (Concessions)

In reply to a question by Colonel Howard-Bury (House of Commons, November 11), regarding the French claim to the Dead Sea concessions, Mr. A. Henderson stated that the French Ambassador was informed in a written Note, dated August 20, of the reasons for which His Majesty's Government were unable to accept His Excellency's suggestion that this dispute was one which they should agree to submit to arbitration. He had now received a further communication from His Excellency on the subject, and the reply to be made thereto was under consideration.

Appointments Vacant

EXPERIENCED WORKS FOREMAN for tar distillery. Details on p. xxi.

AN ASSISTANT CHEMIST for research on inks. Details on p. xxi.

Society of Public Analysts

AN ordinary meeting of the Society of Public Analysts was held at the Chemical Society's Rooms, Burlington House, on Wednesday, November 6, the president, Mr. Edward Hinks, being in the chair.

Certificates were read for the first time in favour of N. L. Allport, J. G. Lunt, F. Morris, A. W. Peters, J. H. Quastel, and J. H. Totton. Certificates were read for the second time in favour of A. G. Avent, W. R. Davies, E. R. Dovey, J. Gray, J. Henderson, C. A. Scarlett, P. A. W. Self, and T. B. Smith.

The following were elected members of the Society; J. W. H. Johnson, Miss M. Olliver, and G. E. Shaw.

The Grouping of Fatty Oils

A paper on "The Grouping of Fatty Oils, with special Reference to Olive Oil," was read by Messrs. E. R. Bolton and K. A. Williams. From the examination of a large number of different types of fatty oils the authors have shown that if the unsaponifiable matter be separated as they describe, and its iodine value determined, the oils are divided into four groups: Group 1 (having iodine value 64 to 70) contains the animal fats and a few vegetable fats (the coconut family); Group 2 (having iodine value 90 to 96) contains the fish and marine animal oils and cocoa-butter; Group 3 (giving iodine value 117 to 124) contains the vegetable oils and fats; Group 4 (having iodine value 197 to 206) contains olive oil only. They recommend, for the determination of the iodine value, the pyridine sulphate dibromide method of Rosenmund and Kuhnhenn; the Hübl method, however, may be used, but the Wijs method is not suitable. Olive oil is readily distinguishable from other oils and adulterants, and may be approximately estimated.

Bacteriological Test for Pasteurised Food

"The Heat Resistance Curve: a New Bacteriological Test for Pasteurised Food," formed the subject of a communication from Dr. Cuthbert Dukes. The idea on which the test is based is that if food has been pasteurised, at say 60° C., then a reheating of the food to any temperature less than 60° C. will not appreciably reduce the number of bacteria, whereas heating above the pasteurising temperature of 60° C may cause a considerable reduction in the number of bacteria per grm. or per c.c. This is due to the fact that bacteria living in pasteurised food have already withstood, and can again withstand, a temperature of 60° C. The mixed bacteria population of unpasteurised food, on the other hand, is reduced progressively, as the temperature is raised from 50° to 60° C. and onwards.

In short, pasteurised food differs from unpasteurised in that subsequent heating causes a large reduction in the number of bacteria only when temperatures higher than the pasteurising temperature are reached, whereas in unpasteurised food the bacteria are reduced progressively and uninterruptedly as the temperature is raised. When an examination is made of an unpasteurised food plentifully stocked with bacteria, the heat resistance test reveals a greater reduction in the number of surviving bacteria as the scale is ascended from 55° to 75° C. When these figures are plotted out as a graph, a characteristic steep curve is obtained. This steep decline is the normal response of unheated food to the heat resistance test. When the test is applied to, say, a pasteurised Cheddar cheese, the graph of the figures obtained expresses itself in a horizontal line. The test is, therefore, of value in determining whether food has been pasteurised, and, if so, the approximate temperature of pasteurisation.

Test for Lactic Acid or Sour Casein

"A New Borax Solubility Test for Lactic Acid or Natural Sour Casein," was discussed by Messrs. W. R. Mummery and F. Bishop. The three methods hitherto mainly used are considered unsuitable for the classification of commercial casein, since they do not afford sufficient information as to the degree of solubility, and the conditions of determination are not sufficiently defined. A new method has been based on the fact that 12·5 grams of borax in water are required to dissolve 100 grams of good commercial casein to obtain a solution which, when diluted, has a constant pH value. This value is termed the "solubility index," and affords a means of classifying caseins.

From Week to Week

A DRAFT ORDER-IN-COUNCIL has been laid before Parliament in regard to the marking of scientific glassware with an indication of origin.

RECENT WILLS INCLUDE: Mr. Arthur William Gemmill, manager of the Anglo-French Nickel Co. at the Hafod Works (net personalty, £97), £2,728.

THE CENTENARY of the *Chemische Zentrallblatt*, the German journal of chemical abstracts, was celebrated by a meeting of the Deutsche Chemische Gesellschaft on November 11.

MR. J. R. WILLIS ALEXANDER, Parliamentary Secretary to the Society of Incorporated Accountants and Auditors, has been appointed secretary of the Institution of Gas Engineers.

DR. HENRY DREYFUS, the chairman of British Celanese, who is at present on a visit to the United States, has, according to American press reports, stated that his concern is now making artificial wool or staple fibre of cellulose acetate. Inquiries made at Spondon failed to elicit either confirmation or denial of the report.

MR. GEORGE LANSBURY, First Commissioner of Works, speaking at a smoke abatement demonstration at 28, Grosvenor Place, London, on November 8, said that "it was his aim to see that all Government offices set an example to the nation in smoke abatement, and as soon as it was a practicable proposition every office in Whitehall would be burning nothing but smokeless fuel."

LORD BROTHERTON OF WAKEFIELD, who was received by the Prince of Wales on Friday, November 8, announced to the Prince his intention of making a gift of £25,000 to the Prince's Endowment Fund for Toc H, to endow Toc H in Yorkshire. In addition to this sum, Lord Brotherton will provide a house in Leeds to be at once a Toc H Mark (or hostel) and the headquarters of Toc H in Yorkshire.

A PRIZE of 500 marks is being offered by the Kolloid-Gesellschaft, Linnéstrasze 2, Leipzig C. 1, Germany, for the best piece of experimental work on colloidal silver, of a physico-chemical, colloid-chemical, medical or biological character. The work, whether published or unpublished, must be submitted to the chairman, Professor Wo. Ostwald, Thomasiusstrasze 2, Leipzig, Germany, by September 1, 1930.

RESTRICTION OF OUTPUT of nitrate of soda was advocated by Mr. W. J. Welch, the chairman, at Monday's annual meeting of Aguas Blancas Nitrate Co. (1928). He stated that a scheme of restriction was under consideration in Chile which, if it were successful, should result in the company earning good profits, though even now the monthly profits were increasing. If there were no restriction, said Mr. Welch, world stocks at the end of July, 1930, would total 2,000,000 tons.

A BIG STRIKE OF NATURAL GAS and naphtha has been made in the Turner Valley oil field, southwest of Calgary, Alberta. The new producer is a well drilled for the Associated Gas and Oil Co., in the neighbourhood of those of the Home Oil Co., and it "came in" on September 21 with a big flow of wet gas. A measurement of the flow on the following day indicated a rate of production of 27,000,000 cubic feet of very wet gas daily. At its present rate of flow the well is considered to be capable of producing 700 barrels or more of naphtha per day.

THE BRITISH EMPIRE PRODUCERS' ORGANISATION held a meeting of its council and vice-presidents on Tuesday at Imperial Chemical House, Millbank. The following resolution, proposed by Lord Melchett, was adopted:—That, having in mind the desirability of the adoption of a policy of the development of the Empire as an economic unit, this council recommends that immediate steps be taken to promote the conclusion of extended reciprocal trade agreements between the United Kingdom and the several parts of the Empire overseas.

VOLCANIC DUST BEDS thirty feet thick are being worked in the deposits near Waldeck, eleven miles north-east of Swift Current, Saskatchewan. Extensive and pure deposits also occur on the Deadman River, thirteen miles north of Ashcroft, British Columbia, and on the east shore of Arrow Lakes, twenty-five miles south of Nakusp, British Columbia. Several other occurrences have been discovered in the vicinity of the Saskatchewan deposits. Volcanic dust is used for the manufacture of cleansers and scouring powders, and in some instances as a substitute for fuller's earth in the refining of hard oils and fats.

A RAYON AND SYNTHETIC YARN ASSOCIATION has been formed by fourteen American rayon producers, as follows:—The American Viscose Co. (Courtaulds), the Du Pont Rayon Co., the Industrial Rayon Corporation, the Tubise Co., the American Glanzstoff Corporation, the American Bemberg Corporation, the American Enka Corporation, the Acme Rayon Corporation, the American Chatillon Corporation, the Belamose Corporation, the Delaware Rayon Co., the New Bedford Rayon Co., the A. M. Johnson Rayon Mills, and the Skenandoa Rayon Corporation. The only conspicuous absentee in this list is the American Celanese Co. The Association will supplement the work at present being done by the American Rayon Institute.

SIR ERNEST BENN has been co-opted a member of the executive committee of the Advertising Association for the ensuing year.

DR. R. E. LIESEGANG, well known for his discovery and investigationof the Liesegang rings, has been awarded the Leonard Prize of the Kolloid-Gesellschaft.

SHAREHOLDERS OF Walkers, Parker and Co., lead and shot manufacturers, have had communicated to them particulars of an offer by Associated Lead Manufacturers to acquire their holdings.

THE I.G. FARBENINDUSTRIE A.-G. have, according to a letter just addressed to the German Labour Minister, discharged 1,300 men from their works at Oppau and Ludwigshafen since February.

MR. J. M. KEYNES, on Thursday, November 7, delivered the Ludwig Mond Lecture at Manchester University. He dealt with the advisability of methods other than high wages as a means of improving the conditions of the working class.

MR. G. ASHCROFT, on the recent occasion of his retirement after 23 years as works manager of Nobels Explosive Factory at Westquarter, Polmont, was made the recipient of several handsome gifts from the staff and workers.

THE INSTITUTION OF CHEMICAL ENGINEERS announces that application forms (returnable December 23) and particulars of the Associate Membership examination for 1930, together with a memorandum on "The Training of a Chemical Engineer," may be obtained from the Honorary Registrar, Institution of Chemical Engineers, Abbey House, Victoria Street, Westminster, London, S.W.1.

A RUSSIAN CHEMICAL DELEGATION, representing both the scientific and industrial sides, is now in Germany. Subsequently it will visit the United States, Great Britain, France and Italy. Its object is to investigate the present state of chemical industry in the leading countries of the world, to conclude agreements for technical assistance, and to prepare the ground for supplies for the Russian economic year 1929–30.

THE DOMINION FERTILISER CO. has secured an area of 8¼ acres at Ravensbourne, New Zealand, and has let a contract amounting to £212,200 to erect a fertiliser plant for the manufacture of superphosphate, with a total capacity of 75,000 tons per annum. The capital is £300,000. The company has secured an undertaking from the Harbour Board that it will dredge the channel and erect wharves alongside the plant for the accommodation of deep-sea vessels.

SHAREHOLDERS OF BOLCKOW, VAUGHAN AND CO., at Manchester, on Tuesday, gave their approval to the scheme of amalgamation with Dorman Long and Co. A further meeting of ordinary shareholders will be held on November 26 to pass the resolution of liquidation of the company. Speaking of the future, the chairman, the Hon. R. D. Kitson, said that when the amalgamation was complete their combined output of steel would be about 1,500,000 tons per annum, or about 20 per cent. of the output of steel of the country.

"PHOSPHATES DE L'OCEANIE," which was started in 1908, exploits a phosphate deposit on the island of Makatea, just north of Tahiti, said to be very rich both in quantity and quality. The company had to contend with labour scarcity, and little could be done during the war. It is expected that labour conditions will be considerably improved by an arrangement with the Government of Indo-China, with regard to the recruitment of coolie labour. Profits realised amounted to 12,004,684 francs in 1927, increasing to 17,844,745 francs in 1928.

AT THE ADJOURNED MEETING of the Cheshire United Salt Co., Ltd., on Tuesday, a shareholder asked if there were any truth in the rumours of the amalgamation of the company with another concern. The chairman, Mr. R. H. Wheeler, in reply, said that he had not received anything in the nature of a definite offer to absorb the company, and it seemed to him that the information that the shareholder had received was rather a premature statement. He could assure the meeting that should any definite offer be received, which the directors felt justified in placing before shareholders, the board would immediately advise them of it.

Obituary

MR. HARRY KINGSLEY, B.Sc., A.I.C., of Cheetham Hill Road, Manchester, on October 17.

MR. ERNEST HARTSHORNE, B.Sc., of Broughton, Manchester, recently, in a motor-cycle accident.

MR. ALBERT BURTON TURNER, of Stoneycroft, Liverpool, on November 8. He was with Evans, Son, Lescher and Webb, Ltd., for over 40 years.

PROFESSOR THOMAS BARLOW WOOD, M.A., F.I.C., F.R.S., Drapers' Professor of Agriculture in the University of Cambridge and Fellow of Gonville and Caius College, on Wednesday, November 6. Born in 1869, and educated at Cambridge, Professor Wood formerly held the offices of secretary of the University Department of Agriculture from its foundation until 1914, and of Reader in Agricultural Chemistry until 1907. The results of his researches on agricultural matters were published in the *Journal of Agricultural Science* and elsewhere. He wrote a number of books, including *The Composition and Nutritive Value of Feeding Stuffs* and *The Chemistry of Crop Production*.

References to Current Literature

British

CARBON BLACKS.—Some new carbon blacks. Preliminary announcement. W. B. Wiegand. *Canadian Chem. and Met.*, October, pp. 269–270.

GENERAL.—Lime process for coating aluminium. L. McCulloch. *Canadian Chem. and Met.*, October, p. 271. A dead-white coating can be given to articles of aluminium by boiling them in milk of lime, with the addition of a little calcium sulphate.

The fresco ordeal: Its chemical and artistic implications. T. Wilson. *Journ. Oil and Colour Chem. Assoc.*, October, pp. 249–265.

United States

ALCOHOL.—The manufacture of anhydrous ethyl alcohol D. B. Keyes. *Ind. Eng. Chem.*, November 1, pp. 998–1001.

AMMONIA OXIDATION.—A converter for the oxidation of ammonia with pure oxygen. J. Y. Yee. *Ind. Eng. Chem.*, November 1, pp. 1024–1026.

ANALYSIS.—Reinecke's salt as a microchemical test for alkaloids. L. Rosenthaler. *Amer. Journ. Pharmacy*, October, pp. 724–725.

Quantitative determination of mercaptans in naphtha. P. Borgstrom and E. E. Reid. *Ind. Eng. Chem. (Analytical Edition)*, October,15, pp. 186–187.

Volumetric determination of manganese as dioxide. I. M. Kolthoff and E. B. Sandell. *Ind. Eng. Chem.*, October 15, pp. 181–185.

ANALYSIS, GAS.—Determination of inert gas content of gas mixtures by means of calcium as an absorbent. M. Leatherman and E. P. Bartlett. *Ind. Eng. Chem. (Analytical Edition)*, October 15, pp. 223–225.

GAS.—New processes aid in manufacture of clean gas. D. L. Jacobson. *Chem. Met. Eng.*, October. pp. 588–591.

GENERAL.—Production of acetic and lactic acids from mill sawdust. R. J. Allgeier, W. H. Peterson, and E. B. Fred. *Ind. Eng. Chem.*, November 1, pp. 1039–1042. Commercial mill sawdust (fir, spruce, and pine) was hydrolysed with dilute sulphuric acid and the resulting sugar liquors were fermented with a lactic acid organism which ferments both pentoses and hexoses. From 7 to 10 per cent. concentrations of sugar may be fermented in five to seven days. A yield of acid equivalent to 95 to 100 per cent. of the sugar destroyed is obtained. This acid consists of 90 to 95 per cent. lactic and 5 to 10 per cent. acetic acids.

Developments in nitrocellulose production. E. P. Partridge. *Ind. Eng. Chem.*, November 1, pp. 1044–1047.

Titanium white: A new method for its preparation. F. von Bichowsky. *Ind. Eng. Chem.*, November, pp. 1061–1063. A simple process for the conversion of titanium nitride into titanium white by the use of nitric acid and catalysts is described. The white produced is unique in its low specific gravity.

METHANOL.—Catalysts for the formation of alcohols from carbon monoxide and hydrogen. V.—Decomposition and synthesis of methanol with a zinc-copper-chromium oxide catalyst. M. R. Fenske and P. K. Frolich. *Ind. Eng. Chem.*, November 1, pp. 1052–1055.

Decomposition of methanol over catalysts composed of oxides of zinc and chromium. J. R. Huffman and B. F. Dodge. *Ind. Eng. Chem.*, November 1, pp. 1056–1061.

SAMPLING.—The segregation of analysed samples. G. F. Smith, L. V. Hardy, and E. L. Gard. *Ind. Eng. Chem. (Analytical Edition)*, October 15, pp. 228–230.

Sampling cleaned apples for the determination of arsenical spray residues. J. W. Barnes and C. W. Murray. *Ind. Eng. Chem.*, November, pp. 1146–1147.

TAR.—Cracking of tars from cannel coal. J. C. Morrell and W. F. Faragher. *Ind. Eng. Chem.*, November, pp. 1084–1086. A crude cannel-coal tar has been cracked to give high yields of gasoline excellently suitable for motor fuel. It is suggested that the processing of cannel coal can be made profitable by working up the retort residues into solid fuels and cracking the tars into high yields of motor fuel.

German

ADSORPTION.—The absorption of carbon dioxide and ammonia on charcoal and graphite. A. Magnus and H. Kratz. *Zeitschrift anorganische Chem.*, Vol. 184, Parts 1–3, pp. 241–271.

ANALYSIS.—The gravimetric determination of mercurous, bromide, and chloride ions by the method of Fajans. L. von Zomburg. *Zeitschrift analytische Chem.*, Vol. 184, Parts 1–3, pp. 237–240.

Conductimetric titratus with visual observation: The technique of a conductimetric sulphate determination in boiling aqueous solution. G. Jander. *Zeitschrift angewandte Chem.*, November 2, pp. 1037–1038.

The investigation of cocoa butter. W. Schmandt. *Zeitschrift angewandte Chem.*, November 2, pp. 1039–1040. Cocoa butter is free from extracted or waste fat if its 2·5 per cent. solution in petroleum ether does not fluoresce under the light of the quartz lamp. The presence of waste cocoa butter may be shown by a colour reaction with glacial acetic acid. Additions of 2 per cent. of fats other than cocoa butter may be discovered by the use of the dipping refractometer.

The simplified determination of trivalent arsenic. G. Fester. *Zeitschrift analytische Chem.*, November 2, p. 1040.

ANALYSIS, GAS.—Quantitative methods of analysis for high-percentage gases. I.—Determination of carbon dioxide, oxygen, and inert gases in carbon dioxide. II.—Determination of oxygen, nitrogen and inert gases in oxygen. M. Trautz, E. Leonhardt and H. Scheuermann. III.—Nitrogen, oxygen, and inert gases in nitrogen. M. Trautz and K. Kipphan. *Zeitschrift analytische Chem.*, Vol. 78, Parts 9–10, 341–349, 350–364.

The determination of fluorine in phosphorites. S. N. Rosanow. *Zeitschrift analytische Chem.*, Vol. 78, Parts 9–10, pp. 321–325.

A rapid potentiometric method of determining nickel. T. Heczko. *Zeitschrift analytische Chem.*, Vol. 78, Parts 9–10, pp. 325–329.

A new gravimetric method for the macro- and micro-determination of copper. G. Spacu and G. Suciu. *Zeitschrift anorganische Chem.*, Vol. 78, Parts 9–10, pp. 329–334.

APPARATUS.—A filtering vessel. J. Mika. *Zeitschrift analytische Chem.*, Vol. 78, Parts 9–10, pp. 334–340.

The benzinometer. W. Vaubel. *Chemiker-Zeitung*, November 6, pp. 859–860. An apparatus for the evaluation of motor fuels and kindred materials.

GENERAL.—"Chemically pure, pulverulent mercury." F. Krauss and K. Mählmann. *Zeitschrift anorganische Chem.*, Vol. 184, Parts 1–3, pp. 298–302. To 3 litres of a cold, saturated aqueous solution of mercuric or mercurous nitrate one drop of concentrated nitric acid is added. Fifty c.c. of this solution are treated, while stirring, with a few drops of 30 per cent. solution of hydrazine hydrate or with 30 c.c. of a saturated solution of ferrous sulphate. A light-coloured precipitate is formed, which on considerable agitation gradually becomes gray. This precipitate is mercury of 99·4 to 99·8 per cent. purity. It is filtered off and washed with alcohol.

A contribution to the physical chemistry of the fatty acids. E. L. Lederer. *Zeitschrift angewandte Chem.*, November 2, pp. 1033–1035.

New methods of washing gases. VI.—Studies on the viscosity of absorption medium. L. Piatti. *Zeitschrift angewandte Chem.*, November 2, pp. 1035–1036.

Methods and apparatus for the recovery of volatile substances. J. Bodewig. *Chemische Fabrik*, October 30, pp. 471–473; November 6, pp. 479–481.

The combustible substance of lignite. W. Eisenschmidt and H. Koop. *Chemischer Zeitung*, November 6, pp. 858–859.

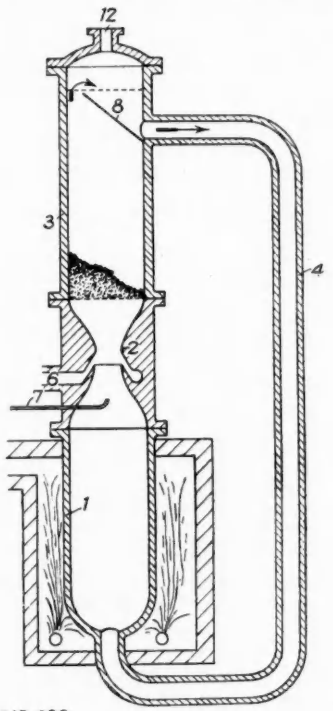
Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

Abstracts of Complete Specifications

319,820. Distilling and Cracking Oils and the Like by Contact with Salt or Metal Melts, Process and Apparatus for. T. Seifer, 29, Hinderburgstrasse, Hanover, Germany. Application date, June 28, 1928.

Oils are distilled and cracked by contact with salt or metal melts, the melt being caused to circulate between a reaction



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chamber and a heating chamber by means of an injected jet of the oil. In one example, the heating chamber 1 and reaction chamber 3 are connected by an injector nozzle 2. Compressed gas is injected at 6 and the oil at 7. A plate 8 facilitates the separation of the melt from the oil. The reaction chamber is packed with filling material, and the heated oil and pressure medium are discharged through the outlet 12 while the melt returns through the pipe 4 to the heating chamber 1. Several other forms of apparatus are described.

319,957. Hydrogen from Methane, Production of. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, October 18, 1928.

In the production of hydrogen from methane or gases containing it by means of steam in the presence of a catalyst, it is found to be preferable to regulate the amount of steam and rate of flow of the gas so that 2-15 per cent. of methane still remains in the gas. The residual methane is then removed by washing with solvents under pressure, or by decomposition with air. By this incomplete decomposition it is possible to operate at a temperature about 100° C. lower than usual. When the residual methane is removed by washing, the greater part of the carbon monoxide is converted into carbon dioxide by means of steam and the gaseous mixture then treated with gasolene fractions boiling between 150°—200° C. in a washing tower. The carbon dioxide and methane are washed out together, and any residual carbon monoxide is removed by washing with a solution of a copper salt. The lower temperature which may be employed in this process is less deleterious to the apparatus, which may be of alloy steels such as Nicrotherm, WT2, or V2A.

319,839. Acid Concentrating and Like Towers. P. H. Evans and R. C. Bowden, Royal Gunpowder Factory, Waltham Abbey, Essex. Application date, July 3, 1928.

A tower for concentrating sulphuric acid and similar purposes is provided with baffles or partitions extending across the interior and supported by the walls. The large slabs usually employed in the construction of such baffles are not used, but the baffles are constructed of acid- and heat-resisting bricks. A tower *a* has an inlet *b* for the acid, and an offtake *c* to the condenser. A final concentration chamber *d* is provided having an inlet *e* for flue gases. The partitions are formed alternately in the form of arches *f* and half arches *g*.

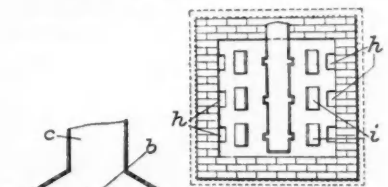

Fig. 2

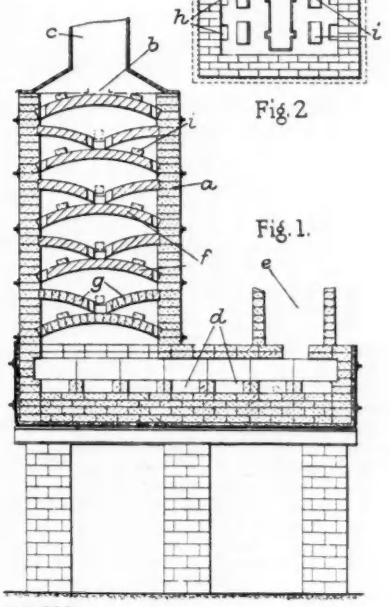

Fig. 1.

319,839

The arches are entirely supported by the sides of the tower, and the half arches partly by the sides of the tower and partly by the next lower arch. Openings *h* are provided at the edge of the baffles *f* for the passage of acid, and a number of single bricks *i* are arranged on the surface of the arches to break up the flow of acid.

Note.—Abstracts of the following specifications which are now accepted, appeared in The Chemical Age when they became open to inspection under the International Convention :—293,874 (Schering Kahlbaum Akt.-Ges.) relating to thymol and menthol, see Vol XIX, p. 267 ; 289,841 (Oranienburger Chemische Fabrik Akt.-Ges.) relating to halogen-substituted organic sulpho-acids and their salts, see Vol. XIX, p. 11 ; 294,106 (Barrett Co.) relating to condensation from coal distillation gases, see Vol. XIX, p. 267 ; 296,431 (I.G. Farbenindustrie Akt.-Ges.) relating to hydrocarbons from coal, tars, mineral oils, etc., see Vol. XIX, p. 466 ; 298,152 (Naugatuck Chemical Co.) relating to styrene and homologues, see Vol. XIX, p. 543 ; 302,574 (I.G. Farbenindustrie Akt.-Ges.) relating to steel and iron containing cerium, see Vol XX, p. 23 (Metallurgical Section).

International Specifications Not Yet Accepted

318,547. CYANIDES. O. Stalhane, 48, Storgatan, Stockholm. International Convention date, September 5, 1928.

Specification 272,996 (See THE CHEMICAL AGE, Vol. XVII, p. 133) describes the preparation of cyanides by feeding briquettes of carbon and an alkali or alkaline earth compound through heated tubes in counter-current to a stream of nitrogen. These tubes are now formed of chromium-nickel alloys such as "Nichroterm," or chromium-nickel-iron alloys. These alloys may be used only for the middle parts of the tubes and cheaper alloys for the end parts. Heating may be effected by passing current through the tube, when the greater resistance of the middle part causes greater heating at that part.

Specifications Accepted with Date of Application

295,641. Concentrated acetic acid, Production of. H. Suida. August 15, 1927.

295,728. Purification of hydrocarbon oils, Process for. Standard Oil Development Co. August 19, 1927.

296,021. Halogen derivatives of organic compounds, Manufacture of. M. Polanyi and S. von Bogdandy. August 23, 1927. Addition to 289,795.

296,347. Alkali and other readily oxidizable metals, Methods of and apparatus for storing. British Thomson-Houston Co., Ltd., August 29, 1927.

299,332. Azo-dyestuffs, Manufacture of. I.G. Farbenindustrie Akt.-Ges. October 21, 1927.

300,961. Raw phosphates, Decomposition of. A. Messerschmitt. November 21, 1927.

305,981. High-boiling hydrocarbons into low boiling hydrocarbons, Process for converting. H. Terrisse and L. Dufour. February 13, 1928.

307,484. Barbituric acid compound, Process for the production of. F. Hefti. March 9, 1928.

307,511. Cracking or distilling of hydrocarbon oils. H. Magnus. March 10, 1928.

320,846. Hydrocarbons of high boiling point, Process for the manufacture of. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*). May 18, 1928.

320,891. Oils from industrial residues, Recovery of. J. Y. Johnson (*I.G. Farbenindustrie Akt.-Ges.*). July 23, 1928.

320,845. Ores, etc. containing acid oxide forming metals such as chromium, manganese, molybdenum, titanium, uranium, etc., for the formation of salts, etc., Treatment of. R. W. Stimson. April 21, 1928.

320,918. Carbonaceous substances under pressure, Treatment of —for the production of valuable liquid products. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) May 21, 1928.

320,921. Crude paraffin wax, Refining of. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) July 19, 1928.

320,930. Oxidizing catalysts. S. Robson. July 25, 1928.

320,937. Normal magnesium carbonate and other magnesium compounds from magnesites, Process of, and apparatus for. T. Hughes. July 26, 1928.

320,952 and 320,959. Electrolytically depositing chromium, Methods of. Soc. Chimique de la Seine and V. Szidon. July 28, 1928.

320,991. Hard metal alloy for tools. J. Bertram. August 23, 1928. Addition to 232,591.

289,075. Cast iron alloys. Molybdenum Corporation of America. April 21, 1927.

289,094. Dyestuffs, Manufacture of. Soc. of Chemical Industry in Basle. April 23, 1927.

290,658. Magnetic alloys. Siemens and Halske Akt.-Ges. May 20, 1927.

292,904. Bromination products of 4:4¹-dimethyl-6:6¹-dichlorothio-indigo. Newport Co. June 25, 1927.

296,049. Oxygen-containing compounds, Process for the production of. Soc. Chimique de la Grande Paroisse Azote et Produits Chimiques. August 24, 1927.

Applications for Patents

[In the case of applications for patents under the International Convention, the priority date (that is, the original application date abroad which the applicant desires shall be accorded to the patent) is given in brackets, with the name of the country of origin. Specifications of such applications are open to inspection at the Patent Office on the anniversary of the date given in brackets, whether or not they have been accepted.]

Annable, H. W. C. Separating gold and antimony from sulphate of antimony ores. 33,643. November 5.

Bleachers' Association, Ltd., Farrington, F., Parker, C. S., and Wall, C. L. Dyeing. 34,238. November 9.

Bodrero, B. Manufacture of neutral superphosphate. 34,142. November 8. (France, November 13, 1928.)

Bond, G. D., and Courtaulds, Ltd. Manufacture of artificial threads. 33,547. November 4.

British Bemberg, Ltd. Production of cuprammonium silk. 34,105. November 8. (Germany, November 19, 1928.)

British Celanese, Ltd. Production of textile materials. 33,503. November 4. (United States, November 3, 1928.)

—— Manufacture of artificial materials. 34,260. November 9. (United States, November 10, 1928.)

British Celanese, Ltd., and Parkinson, R. H. Colouration of materials. 34,119. November 8.

British Celanese, Ltd., Dreyfus, C., and Platt, H. Treatment of cellulosic materials. 33,797. November 6.

Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of anthraquinone dyestuffs. 33,865. November 6.

—— Process for disinfecting materials. 33,981. November 7.

—— Manufacture of artificial masses. 33,982. November 7.

Carpmael, A., and Schering-Kahlbaum Akt.-Ges. Manufacture of heterocyclic compounds. 33,866. November 6.

Durand and Huguenin Akt.-Ges. Producing colour reserves under vat-dyeing. 33,656. November 5. (Germany, November 5, 1928.)

Elkington, H. D., and Naamlooze Vennootschap de Bataafsche Petroleum Maatschappij. Manufacture of alcohols. 33,831. November 6.

Ferro Alloy Co. of Africa (Proprietary), Ltd. Separating gold and antimony from sulphide of antimony ores. 33,643. November 5.

Groves, W. W., and I.G. Farbenindustrie Akt.-Ges. Manufacture of substitution products of aromatic hydrocarbons. 33,654. November 5.

—— Manufacture of cyclic ketones. 33,804. November 6.

—— Manufacture of 1 : 4 : 6 : 8-naphthalene tetracarboxylic acid, etc. 33,987. November 7.

I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Manufacture of alkali metal cyanides. 33,548. November 4.

—— Apparatus for low temperature carbonisation of bituminous, etc., materials. 33,781. November 6.

—— Production of figurative representations, etc. 33,782. November 6.

—— Agents stable to cold. 33,972. November 7.

—— Apparatus for drying and low-temperature carbonisation. 34,147. November 8.

—— Manufacture of glycollic acid esters. 34,148. November 8.

I.G. Farbenindustrie Akt.-Ges. Manufacture of substitution products of aromatic hydrocarbons. 33,654. November 5.

—— Manufacture of cyclic ketones. 33,804. Noember 6.

—— Manufacture of 1 : 4 : 6 : 8-naphthalene tetracarboxylic acid, etc. 33,987. November 7.

—— Manufacture of therapeutically-valuable solutions. 33,689. November 5. (Germany, November 6, 1928.)

—— Manufacture of sulpho derivatives of higher fatty acids. 33,868. November 6. (Germany, November 6, 1928.)

—— Manufacture of benzimidazolone stibinic acids. 33,989. November 7. (Germany, November 7, 1928.)

—— Dyeing skins, etc. 33,990. Novembe r7. (Germany, November 7, 1928.)

—— Regenerating zinc chloride lyes. 34,160. November 8. (Germany, November 9, 1928.)

—— Washing artificial silk. 34,165. November 8. (Germany, November 8, 1928.)

I.G. Farbenindustrie Akt.-Ges., Kalischer, G., and Keller, K. Manufacture of sulpho derivatives of higher fatty acids. 33,983. November 7.

Imperial Chemical Industries, Ltd., Rodd, E. H., and Piggott, H. A. Manufacture of dyestuffs. 33,493. November 4.

Imperial Chemical Industries, Ltd., and Ferguson, J. Production of acetylene. 34,136. November 8.

Imperial Chemical Industries, Ltd. Removal of acetylene from gases. 34,236. November 9.

Lawrence, H. S., Pemberton, R. T., and United Water Softeners, Ltd. Water-softening apparatus. 34,035. November 7.

—— Water-softening apparatus. 34,152. November 8.

Naamlooze Vennootschap Maatschappij tot Exploitatie van Veredelingsprocedes and Wade, H. Production of nitrogenous compounds. 33,693. November 5.

Robson, S. Manufacture of sulphuric acid. 34,132. November 8.

Scottish Dyes, Ltd., Thomas, J., and Shaw, C. Production of dibenzanthrone derivatives, etc. 33,666. November 5.

Soc. of Chemical Industry in Basle. Manufacture of cellulose ethers. 33,304. November 1. (Switzerland, November 3, 1928.)

—— Manufacture of azo-dyestuffs. 33,418. November 2. (Switzerland, November 2, 1928.)

Stapp, P. Production of solid carbondioxide. 34,040. November 7.

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£19 per ton.

ACID BORIC, COMMERCIAL.—Crystal, £20 per ton; powder, £21 per ton; extra fine powder, £23 per ton. Packed in 2 cwt. bags carriage paid any station in Great Britain.

ACID HYDROCHLORIC.—3s. 9d. to 6s. per carboy d/d, according to purity, strength and locality.

ACID NITRIC, 80° TW.—£21 10s. to £27 per ton, makers' works according to district and quality.

ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations; 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.

AMMONIA ALKALI.—£6 15s. per ton f.o.r. Special terms for contracts.

BISULPHITE OF LIME.—£7 10s. per ton, f.o.r. London, packages free.

BLEACHING POWDER.—Spot, £9 10s. per ton d/d; Contract, £8 10s. per ton d/d, 4-ton lots.

BORAX, COMMERCIAL.—Crystals, £19 10s. to £20 per ton; granulated, £12 10s. per ton; powder, £14 per ton. (Packed in 1 cwt. bags carriage paid any station in Great Britain.)

CALCIUM CHLORIDE (SOLID).—£5 to £5 5s. per ton d/d carr. paid.

COPPER SULPHATE.—£25 to £25 10s. per ton.

METHYLATED SPIRIT 61 O.P.—Industrial, 1s. 3d. to 1s. 8d. per gall. pyridinised industrial, 1s. 5d. to 1s. 10d. per gall.; mineralised 2s. 4d. to 2s. 8d. per gall.; 64 O.P., 1d. extra in all cases.

NICKEL SULPHATE.—£38 per ton d/d.

NICKEL AMMONIA SULPHATE.—£38 per ton d/d.

POTASH CAUSTIC.—£30 to £33 per ton.

POTASSIUM BICHROMATE.—4½d. per lb.

POTASSIUM CHLORATE.—3⅞d. per lb., ex-wharf, London, in cwt. kegs.

SALAMMONIAC.—£45 to £50 per ton d/d. Chloride of ammonia, £37 to £45 per ton, carr. paid.

SALT CAKE.—£3 15s. to £4 per ton d/d. In bulk.

SODA CAUSTIC, SOLID.—Spot lots delivered, £15 2s. 6d. to £18 per ton, according to strength; 20s. less for contracts.

SODA CRYSTALS.—£5 to £5 5s. per ton, ex railway depots or ports.

SODIUM ACETATE 97/98%.—£21 per ton.

SODIUM BICARBONATE.—£10 10s. per ton, carr. paid.

SODIUM BICHROMATE.—3½d. per lb.

SODIUM BISULPHITE POWDER, 60/62%.—£17 10s. per ton delivered for home market, 1-cwt. drums included; £15 10s. f.o.r. London.

SODIUM CHLORATE.—2¾d. per lb.

SODIUM NITRITE, 100% BASIS.—£27 per ton d/d.

SODIUM PHOSPHATE.—£14 per ton, f.o.b. London, casks free.

SODIUM SULPHATE (GLAUBER SALTS).—£3 12s. 6d. per ton.

SODIUM SULPHIDE CONC. SOLID, 60/65.—£13 5s. per ton d/d. Contract, £13. Carr. paid.

SODIUM SULPHIDE CRYSTALS.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. paid.

SODIUM SULPHITE, PEA CRYSTALS.—£14 per ton f.o.b. London, 1-cwt. kegs included.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—7d. to 10d. per lb. Crude 60's, 2s. 4½d. to 2s. 6d. per gall.

ACID CRESYLIC 99/100.—2s. 2d. to 2s. 7d. per gall. Pure, 5s. 6d. per gall. 97/99.—2s. 1d. to 2s. 2d. per gall. Pale, 95%, 1s. 9d. to 1s. 10d. per gall. 98%, 2s. 2d. to 2s. 5d. Dark, 1s. 6d. to 2s. 2d. Refined, 2s. 7d. to 2s. 10d. per gall.

ANTHRACENE.—A quality, 2d. to 2½d. per unit. 40%, £4 10s. per ton.

ANTHRACENE OIL, STRAINED, 1080/1090.—4¾d. to 5½d. per gall. 1100, 5½d. to 6d. per gall.; 1110, 6d. to 6½d. per gall. Unstrained (Prices only nominal).

BENZOLE.—Prices at works: Crude, 10d. to 11d. per gall.; Standard Motor, 1s. 5d. to 1s. 6d. per gall.; 90%, 1s. 7d. to 1s. 8d. per gall; Pure, 1s. 10d. to 1s. 11d. per gall.

TOLUOLE.—90%, 1s. 9d. to 2s. 1d. per gall. Firm. Pure, 1s. 11d. to 2s. 4d. per gall.

XYLOL.—1s. 5d. to 1s. 10d. per gall. Pure, 1s. 8d. to 2s. 1d. per gall.

CREOSOTE.—Cresylic, 20/24%, 6¾d. to 7d. per gall.; Heavy, 6½d to 6¾d. per gall. Middle oil, 4½d. to 5d. per gall. Standard specification, 3d. to 4d. per gall. Light gravity, 2d. to 2¼d. per gall. ex works. Salty, 7½d. per gall.

NAPHTHA.—Crude, 8¼d. to 8¾d. per gall. Solvent, 90/160, 1s. 3d. to 1s. 3½d. per gall. Solvent, 95/160, 1s. 4d. to 1s. 5d. per gall. Solvent 90/190, 1s. to 1s. 3d. per gall.

NAPHTHALENE, CRUDE.—Drained Creosote Salts, £4 10s. to £5 per ton. Whizzed, £5 per ton. Hot pressed, £8 10s. per ton.

NAPHTHALENE.—Crystals, £12 5s. per ton. Purified Crystals, £14 10s. per ton. Quiet. Flaked, £14 to £15 per ton, according to districts.

PITCH.—Medium soft, 47s. 6d. per ton, f.o.b., according to district. Nominal.

PYRIDINE.—90/140, 3s. 9d. to 4s. per gall. 90/160, 3s. 6d. to 3s. 9d. per gall. 90/180, 1s. 9d. to 2s. 3d. per gall. Heavy, prices only nominal.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:

ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.

ACID ANTHRANILIC.—6s. per lb. 100%.

ACID BENZOIC.—1s. 8¼d. per lb.

ACID GAMMA.—4s. 6d. per lb.

ACID H.—3s. per lb.

ACID NAPHTHIONIC.—1s. 6d. per lb.

ACID NEVILLE AND WINTHER.—4s. 9d. per lb.

ACID SULPHANILIC.—8¼d. per lb.

ANILINE OIL.—8d. per lb. naked at works.

ANILINE SALTS.—8d. per lb. naked at works.

BENZALDEHYDE.—2s. 3d. per lb.

BENZIDINE BASE.—3s. 3d. per lb. 100% basis d/d.

BENZOIC ACID.—1s. 8¼d. per lb.

o-CRESOL 29/31° C.—£3 1s. 10d. per cwt., in 1 ton lots.

m-CRESOL 98/100%.—2s. 9d. per lb, in ton lots d/d.

p-CRESOL 32/34° C.—2s. per lb., in ton lots d/d.

DICHLORANILINE.—1s. 10d. per lb.

DIMETHYLANILINE.—1s. 11d. per lb.

DINITROBENZENE.—8d. per lb. naked at works. £75 per ton.

DINITROCHLORBENZENE.—£84 per ton d/d.

DINITROTOLUENE.—48/50° C. 7½d. per lb. naked at works. 66/68° C, 9d. per lb. naked at works.

DIPHENYLAMINE.—2s. 10d. per lb. d/d.

a-NAPHTHOL.—2s. per lb. d/d.

B-NAPHTHOL.—10d. per lb. d/d.

a-NAPHTHYLAMINE.—1s. 3d. per lb.

B-NAPHTHYLAMINE.—3s. per lb.

o-NITRANILINE.—5s. 9d. per lb.

m-NITRANILINE.—3s. per lb. d/d.

p-NITRANILINE.—1s. 8d. per lb.

NITROBENZENE.—6d. per lb. naked at works.

NITRONAPHTHALENE.—1s. 3d. per lb.

R. SALT.—2s. 2d. per lb.

SODIUM NAPHTHIONATE.—1s. 8¼d. per lb. 100% basis d/d.

o-TOLUIDINE.—8d. per lb.

p-TOLUIDINE.—1s. 9d. per lb. naked at works.

m-XYLIDINE ACETATE.—2s. 6d. per lb. 100%.

N. W. ACID.—4s. 9d. per lb. 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £9 15s. to £10 5s. per ton. Grey, £16 10s. to £17 10s. per ton. Liquor, 9d. per gall.

ACETONE.—£78 per ton.

CHARCOAL.—£6 to £8 10s. per ton, according to grade and locality.

IRON LIQUOR.—1s. 3d. per gall. 32° Tw. 1s. per gall. 24° Tw.

RED LIQUOR.—9d. to 10½d. per gall. 16° Tw.

WOOD CRESOTE.—1s. 9d. per gall. Unrefined.

WOOD NAPHTHA, MISCIBLE.—3s. 8d. to 3s. 11d. per gall. Solvent, 4s. to 4s. 3d. per gall.

WOOD TAR.—£3 10s. to £4 10s. per ton.

BROWN SUGAR OF LEAD.—£38 per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6½d. to 1s. 3d. per lb. according to quality; Crimson, 1s. 4d. to 1s. 6d. per lb., according to quality.

ARSENIC SULPHIDE, YELLOW.—1s. 10d. to 2s. per lb.

BARYTES.—£5 10s. to £7 per ton, according to quality.

CADMIUM SULPHIDE.—5s. to 6s. per lb.

CARBON BISULPHIDE.—£25 to £27 10s. per ton, according to quantity

CARBON BLACK.—5½d. per lb., ex wharf.

CARBON TETRACHLORIDE.—£40 to £50 per ton, according to quantity, drums extra.

CHROMIUM OXIDE, GREEN.—1s. 2d. per lb.

DIPHENYLGUANIDINE.—3s. 9d. per lb.

INDIARUBBER SUBSTITUTES, WHITE AND DARK.—4¾d. to 5¾d. per lb.

LAMP BLACK.—£30 per ton, barrels free.

LEAD HYPOSULPHITE.—9d. per lb.

LITHOPONE, 30%.—£20 to £22 per ton.

MINERAL RUBBER "RUBPRON."—£13 12s. 6d. per ton, f.o.r. London

SULPHUR.—£10 to £13 per ton, according to quality.

SULPHUR CHLORIDE.—4d. to 7d. per lb., carboys extra

SULPHUR PRECIP. B. P.—£55 to £60 per ton.

THIOCARBAMIDE.—2s. 6d. to 2s. 9d. per lb., carriage paid.

THIOCARBANILIDE.—2s. 1d. to 2s. 3d. per lb.

VERMILION, PALE OR DEEP.—6s. 6d. to 6s. 9d. per lb.

ZINC SULPHIDE.—8d. to 11d. per lb.

Pharmaceutical and Photographic Chemicals

ACID, ACETIC, PURE, 80%.—£37 per ton ex wharf London, barrels free.

ACID, ACETYL SALICYLIC.—2s. 9d. to 2s. 11d. per lb., according to quantity.

ACID, BENZOIC, B.P.—2s. to 3s. 3d. per lb., according to quantity. Solely ex Gum, 1s. 6d. per oz.; 50-oz. lots, 1s. 3d. per oz.

ACID, BORIC B.P.—Crystal, £32 per ton; powder, £36 per ton; extra fine powder, £38 per ton. Packed in 2-cwt. bags carriage paid any station in Great Britain.

ACID, CAMPHORIC.—19s. to 21s. per lb.

ACID, CITRIC.—2s. to 2s. 0½d. per lb., less 5%.

ACID, GALLIC.—2s. 8d. per lb. for pure crystal, in cwt. lots.

ACID, MOLYBDIC.—5s. 3d. per lb. in ½ cwt. lots. Packages extra. Special prices for quantities and contracts.

ACID, PYROGALLIC, CRYSTALS.—7s. 3d. per lb. Resublimed, 8s. 3d.

ACID, SALICYLIC, B.P. PULV.—1s. 5d. to 1s. 7d. per lb. Technical.—1s. to 1s. 2d. per lb.

ACID, TANNIC B.P.—2s. 8d. to 2s. 10d. per lb.

ACID, TARTARIC.—1s. 4¾d. per lb., less 5%.

ACETANILIDE.—1s. 5d. to 1s. 8d. per lb. for quantities.

AMIDOL.—7s. 6d. to 9s. per lb., d/d.

AMIDOPYRIN.—7s. 9d. to 8s. per lb.

AMMONIUM BENZOATE.—3s. 3d. to 3s. 9d. per lb., according to quantity. 18s. per lb. ex Gum.

AMMONIUM CARBONATE B.P.—£36 per ton. Powder, £39 per ton in 5 cwt. casks. Resublimated, 1s. per lb.

AMMONIUM MOLYBDATE.—4s. 9d. per lb. in ½ cwt. lots. Packages extra. Special prices for quantities and contracts.

ATROPHINE SULPHATE.—9s. per oz.

BARBITONE —5s. 9d. to 6s. per lb.

BENZONAPHTHOL.—3s. to 3s. 3d. per lb. spot.

BISMUTH CARBONATE.—8s. 9d. per lb.

BISMUTH CITRATE.—8s. 3d. per lb.

BISMUTH SALICYLATE.—8s. 3d. per lb.

BISMUTH SUBNITRATE.—7s. 6d. per lb.

BISMUTH NITRATE.—Cryst. 5s. 3d. per lb.

BISMUTH OXIDE.—11s. 3d. per lb.

BISMUTH SUBCHLORIDE.—10s. 3d. per lb.

BISMUTH SUBGALLATE.—7s. 3d. per lb. Extra and reduced prices for smaller and larger quantities of all bismuth salts respectively.

BISMUTHI ET AMMON LIQUOR.—Cit. B.P. in W. Qts. 1s. 0½d. per lb.; 12 W. Qts. 11½d. per lb.; 36 W Qts. 11d. per lb.

BORAX B.P.—Crystal, £20 per ton; powder, £21 per ton. Packed in 1- or 2-cwt. bags carriage paid any station in Great Britain.

BROMIDES.—Ammonium, 1s. 11½d. per lb.; potassium, 1s. 8½d. per lb.; granular, 1s. 7½d. per lb.; sodium, 1s. 10½d. per lb. Prices for 1 cwt. lots.

CALCIUM LACTATE.—B.P., 1s. 2d. to 1s. 3d per lb., in 1-cwt. lots.

CAMPHOR.—Refined flowers, 3s. 3d. to 3s. 4d. per lb., according to quantity; also special contract prices.

CHLORAL HYDRATE.—3s. 1d. to 3s. 4d. per lb.

CHLOROFORM.—2s. 4½d. to 2s. 7½d. per lb., according to quantity.

CREOSOTE CARBONATE.—6s. per lb.

ETHERS.—S.G. ·730—11d. to 1s. per lb., according to quantity other gravities at proportionate prices.

FORMALDEHYDE, 40%.—37s. per cwt., in barrels, ex wharf.

GUAIACOL CARBONATE.—4s. 6d. to 4s. 9d. per lb.

HEXAMINE.—2s. 3d. to 2s. 6d. per lb.

HOMATROPINE HYDROBROMIDE.—30s. per oz.

HYDRASTINE HYDROCHLORIDE.—English make offered at 120s. per oz.

HYDROGEN PEROXIDE (12 VOLS.).—1s. 4d. per gallon, f.o.r. makers' works, naked. Winchesters, 2s. 11d. per gall. B.P., 10 vols., 2s. to 2s. 3d. per gall.; 20 vols., 4s. per gall.

HYDROQUINONE.—3s. 9d. to 4s. per lb., in cwt. lots.

HYPOPHOSPHITES.—Calcium, 2s. 5d. per lb.; potassium, 2s. 8½d. per lb.; sodium, 2s. 7½d. per lb., in 1 cwt. lots, assorted.

IRON AMMONIUM CITRATE.—B.P., 2s. 8d. to 2s. 11d. per lb. Green, 3s. 1d. to 3s. 4d. per lb. U.S.P., 2s. 9d. to 3s. per lb.

IRON PERCHLORIDE.—18s. to 20s. per cwt., according to quantity.

IRON QUININE CITRATE.—B.P., 8¾d. to 9¼d. per oz., according to quantity.

MAGNESIUM CARBONATE.—Light commercial, £31 per ton net.

MAGNESIUM OXIDE.—Light commercial, £62 10s. per ton, less 2½%; Heavy commercial, £21 per ton, less 2½%; in quantity lower; Heavy Pure, 2s. to 2s. 3d. per lb.

MENTHOL.—A.B.R. recrystallised B.P., 18s. 6d. per lb. net; Synthetic, 9s. 6d. to 11s. per lb.; Synthetic detached crystals 9s. 6d. to 14s. per lb., according to quantity; Liquid (95%), 9s. per lb.

MERCURIALS B.P.—Up to 1 cwt. lots, Red Oxide, crystals, 8s. 4d. to 8s. 5d. per lb., levig., 7s. 10d. to 7s. 11d. per lb.; Corrosive Sublimate, Lump, 6s. 7d. to 6s. 8d. per lb., Powder, 6s. to 6s. 1d. per lb.; White Precipitate, Lump, 6s. 9d. to 6s. 10d. per lb., Powder, 6s. 10d. to 6s. 11d. per lb., Extra Fine, 6s. 11d. to 7s. per lb.; Calomel, 7s. 2d. to 7s. 3d. per lb.; Yellow Oxide, 7s. 8d. to 7s. 9d. per lb.; Persulph, B.P.C., 6s. 11d. to 7s. per lb.; Sulph. nig., 6s. 8d. to 6s. 9d. per lb. Special prices for larger quantities.

METHYL SALICYLATE.—1s. 6d. to 1s. 8d. per lb.

METHYL SULPHONAL.—18s. 6d. to 20s. per lb.

METOL.—9s. to 11s. 6d. per lb. British make.

PARAFORMALDEHYDE.—1s. 9d. per lb. for 100% powder.

PARALDEHYDE.—1s. 4d. per lb.

PHENACETIN.—3s. 2½d. to 3s. 7d. per lb.

PHENAZONE.—5s. 11d. to 6s. 1½d. per lb.

PHENOLPHTHALEIN.—5s. 11d. to 6s. 1½d. per lb.

POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—104s. per cwt., less 2½ per cent.

POTASSIUM CITRATE.—B.P.C., 2s. 7d. per lb. in 1 cwt. lots.

POTASSIUM FERRICYANIDE.—1s. 9d. per lb., in cwt. lots.

POTASSIUM IODIDE.—16s. 8d. to 17s. 2d. per lb., according to quantity.

POTASSIUM METABISULPHITE.—6d. per lb., 1-cwt. kegs included f.o.r. London.

POTASSIUM PERMANGANATE.—B.P. crystals, 5½d. per lb., spot.

QUININE SULPHATE.—1s. 8d. to 1s. 9d. per oz., bulk in 100 oz. tins.

RESORCIN.—2s. 10d. to 3s. per lb., spot.

SACCHARIN.—43s. 6d. per lb.

SALOL.—2s. 3d. to 2s. 6d. per lb.

SODIUM BENZOATE, B.P.—1s. 8d. to 1s. 11d. per lb.

SODIUM CITRATE, B.P.C., 1911.—2s. 4d. per lb., B.P.C. 1923—2s. 7d. per lb. Prices for 1 cwt. lots. U.S.P., 2s. 6d. to 2s. 9d. per lb., according to quantity.

SODIUM FERROCYANIDE.—4d. per lb., carriage paid.

SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 per ton, d/d consignee's station in 1-cwt. kegs.

SODIUM NITROPRUSSIDE.—16s. per lb.

SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—100s. per cwt. Crystals, 5s. per cwt. extra.

SODIUM SALICYLATE.—Powder, 2s. 2d. to 2s. 4d. per lb. Crystal, 2s. 3d. to 2s. 5d. per lb.

SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 1d. per lb.

SODIUM SULPHITE, ANHYDROUS.—£27 10s. to £29 10s. per ton, according to quantity. Delivered U.K.

SULPHONAL.—9s. 6d. to 10s. per lb.

TARTAR EMETIC, B.P.—Crystal or powder, 2s. 1d. to 2s. 3d. per lb.

THYMOL.—Puriss., 9s. 1d. to 9s. 4d. per lb., according to quantity. Firmer. Natural, 12s. per lb.

Perfumery Chemicals

ACETOPHENONE.—7s. per lb.

AUBEPINE (EX ANETHOL).—12s. per lb.

AMYL ACETATE.—2s. 6d. per lb.

AMYL BUTYRATE.—5s. per lb.

AMYL CINNAMIC ALDEHYDE.—15s. per lb.

AMYL SALICYLATE.—2s. 9d. per lb.

ANETHOL (M.P. 21/22° C.).—6s. per lb.

BENZALDEHYDE FREE FROM CHLORINE.—2s. 6d. per lb.

BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL.—2s. per lb.

BENZYL ALCOHOL FREE FROM CHLORINE.—2s. per lb.

BENZYL BENZOATE.—2s. 3d. per lb.

CINNAMIC ALDEHYDE NATURAL.—13s. 3d. per lb.

COUMARIN.—8s. 9d. per lb.

CITRONELLOL.—9s. per lb.

CITRAL.—8s. per lb.

ETHYL CINNAMATE.—6s. 6d. per lb.

ETHYL PHTHALATE.—2s. 9d. per lb.

EUGENOL.—11s. 3d. per lb.

GERANIOL (PALMAROSA).—19s. per lb.

GERANIOL.—6s. 6d. to 10s. per lb.

HELIOTROPINE.—6s. 9d. per lb.

ISO EUGENOL.—12s. 6d. per lb.

LINALOL.—Ex Bois de Rose, 12s. per lb. Ex Shui Oil, 10s. per lb.

LINALYL ACETATE.—Ex Bois de Rose, 15s. per lb. Ex Shui Oil, 12s. per lb.

PHENYL ETHYL ACETATE.—11s. per lb.

PHENYL ETHYL ALCOHOL.—9s. 6d. per lb.

RHODINOL.—50s. per lb.

SAFROL.—2s. 6d. per lb.

TERPINEOL.—1s. 6d. per lb.

VANILLIN, EX CLOVE OIL.—14s. to 15s. per lb. Ex Guaiacol, 13s. to 14s. per lb.

Essential Oils

ALMOND OIL.—Foreign S.P.A., 10s. per lb.

ANISE OIL.—4s. per lb.

BERGAMOT OIL.—14s. 3d. per lb.

BOURBON GERANIUM OIL.—18s. 6d. per lb.

CANANGA OIL, JAVA.—11s. 6d. per lb.

CASSIA OIL, 80/85%.—5s. 6d. per lb.

CINNAMON OIL LEAF.—8s. 6d. per oz.

CITRONELLA OIL.—Java, 3s. 6d. per lb., c.i.f. U.K. port.

CLOVE OIL (90/92%).—8s. 3d. per lb.

EUCALYPTUS OIL, AUSTRALIAN, B.P. 70/75%.—1s. 10d. per lb.

LAVENDER OIL.—Mont Blanc, 38/40%, 13s. 9d. per lb.

LEMON OIL.—13s. 3d. per lb.

LEMONGRASS OIL.—4s. per lb.

ORANGE OIL, SWEET.—14s. 6d. per lb.

PEPPERMINT OIL.—English, 87s. 6d. per lb.; Wayne County, 15s. 6d. per lb.; Japanese, 5s. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to* THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.

London, November 14, 1929.

THERE has been quite an active demand in the majority of articles during the current week, and prices remain steady. Export business is also good.

General Chemicals

ACETONE.—The demand is maintained at £76 10s. per ton to £85 per ton, according to quantity.

ACETIC ACID is steady at £36 10s. per ton for 80% technical, edible £1 per ton extra, and in good demand.

ACID CITRIC is still slow of sale, price a little easier at about 2s. 2d. per lb., less 5%.

ACID LACTIC.—In steady request at £43 per ton for the 50% by weight, usual pale quality.

ACID OXALIC is in good demand at £30 7s. 6d. to £32 per ton, according to quantity.

ACID TARTARIC.—Price unchanged at 1s. 4½d. to 1s. 5d. per lb., less 5%, and in little better demand.

ALUMINA SULPHATE is very firm at £7 15s. to £8 per ton for 17–18% quality.

ARSENIC is unchanged and steady at £16 17s. 6d. per ton, free on rails mines.

BORAX.—In good demand at £13 per ton.

CREAM OF TARTAR, 99–100% B.P. is in fair demand at about £104 to £106 per ton.

COPPER SULPHATE.—Unchanged at about £28 per ton, less 5%.

FORMALDEHYDE.—Quite brisk demand at about £36 per ton.

LEAD ACETATE remains firm at £44 per ton for white and £43 per ton for brown, and in steady request.

LEAD NITRATE is unchanged at £33 15s. per ton, and in steady request.

LIME ACETATE.—Unchanged.

LITHOPONE.—The improved demand continues. The price is unchanged at £19 15s. to £23 per ton, according to quality.

METHYL ACETONE is steady at £57 10s. per ton.

POTASSIUM CARBONATE.—Unchanged at £27 per ton for 96–98%.

CHLORATE OF POTASH.—Firm at £30 and in steady request.

PERMANGANATE OF POTASH.—The position is very firm, and the prices are advancing. There is an active demand at 5½d. to 5¾d. per lb. for the B.P. quality.

PRUSSIATE OF POTASH.—Firm at £63 10s. to £65 10s. per ton, and the increased demand continues.

SODIUM ACETATE is in steady request at £22 to £23 per ton.

SODIUM BICHROMATE is unchanged and firm at 3⅜d. per lb., and in good request.

SODIUM HYPOSULPHITE.—Photographic quality, £14 10s. to £15 per ton; commercial quality, £8 10s. to £9 per ton, and in good demand.

SODIUM NITRITE is unchanged at £20 per ton, and in good request.

SODIUM PHOSPHATE.—Tri-basic, £17 10s.; di-basic, £12 per ton, with a steady demand.

SODIUM PRUSSIATE is unchanged and firm at 4¾d. to 5¼d. per lb. and in steady request.

TARTAR EMETIC is a little easier at 11d. per lb., and in steady request.

ZINC SULPHATE.—Unchanged at £13 10s. per ton.

Coal Tar Products

There is little change to report regarding coal tar products in general, the market still remaining very firm.

MOTOR BENZOL remains firm, at about 1s. 5½d. to 1s. 6d. per gallon, f.o.r. makers' works.

SOLVENT NAPHTHA is unchanged at about 1s. 2½d. to 1s. 3d. per gallon, f.o.r.

HEAVY NAPHTHA is quoted at about 1s. 1d. per gallon, f.o.r.

CREOSOTE OIL remains at about 3½d. to 4d. per gallon on rails in the North, and at 4¾d. per gallon in London.

NAPHTHALENES remain at about £4 10s. per ton for the firelighter quality, at £5 per ton for the 74/76 quality, and at £6 to £6 5s. per ton for the 76/78 quality.

PITCH.—No change is shown, the price remaining at 47s. 6d. per ton, f.o.b. East Coast port.

Nitrogen Products

Sulphate of Ammonia.—Good sales continue to be reported from the Far East. Apart from these markets, buyers appear to be holding off. Sellers are still holding for £8 18s. 9d. per ton, f.o.r. U.K. port, in single bags for neutral quality basis 20·6 per cent. nitrogen.

Home.—There have been a good many inquiries for spring delivery, but producers have not yet fixed prices for delivery beyond the end of December.

Nitrate of Soda.—Large shipments are still taking place to Europe and the United States. In the latter country there are large stocks of the Chilean product at ports, as demand is rather sluggish. It is understood that the producers of synthetic nitrate of soda have made good sales.

Latest Oil Prices

LONDON, November 13.—LINSEED OIL was erratic. Spot, ex mill, £44; November, £40; December, £39 10s.; January to April, £38; and May to August, £36 5s., naked. RAPE OIL was slow. Crude extracted, £42 10s.; technical refined, £44, naked, ex wharf. COTTON OIL was quiet. Egyptian crude, £31; refined common edible, £36; and deodorised, £38, naked, ex mill. TURPENTINE was inactive and 3d. per cwt. lower; American, spot 42s.; November to December, 42s. 3d.; and January to April, 43s. 3d.

HULL.—LINSEED OIL.—Spot, £42 15s.; November, £42 5s.; December, £42; January to April, £39 10s.; May to August, £37 10s. per ton, naked. COTTON OIL.—Egyptian, crude, spot, £30; November to December, £29; edible refined, spot, £33 15s.; technical, spot, £33 5s.; deodorised, spot, £35 15s. per ton, naked. PALM KERNEL OIL.—Crude, 5½ per cent., spot, £32 per ton, naked. GROUNDNUT OIL.—Crushed-extracted, spot, £35 10s.; deodorised spot, £39 10s. per ton. SOYA OIL.—Extracted and crushed, spot, £32 10s.; deodorised, spot, £30 per ton. RAPE OIL.—Crushed-extracted, spot, £41 10s.; refined, spot, £43 10s. per ton. TURPENTINE.—Spot, 44s. 6d. per cwt., net cash terms, ex mill. CASTOR OIL and COD OIL unaltered.

South Wales By-Products

THERE is no marked change in South Wales by-products activities. Pitch is slightly more active, but sales are not as heavy as anticipated. Prices are unchanged on a basis of 49s. to 50s. per ton, delivered. Road tar maintains its slight improvement, with quotations unchanged at from 11s. to 14s. per 40-gallon barrel. Creosote is less active, with values steady at from 3d. to 4¼d. per gallon. Heavy and solvent naphthas have a slightly weaker market, but prices are unchanged, solvent naphtha being quoted at 1s. 3d. to 1s. 6d. per gallon, and heavy naphtha at from 11d. to 1s. 1d. per gallon. Refined tars maintain their fair demand, quotations for gasworks' and coke oven tar being unchanged. Motor benzol is in better demand at 1s. 3½d. to 1s. 5½d. per gallon. Sulphate of ammonia, although there is inquiry for it, has very little sale. Coke and patent fuel exports continue to show a slight expansion, and values of both, ex-ship Cardiff, Swansea, and Newport, are unchanged. Oil imports over the four weeks ending November 5 amounted to 22,249,780 gallons.

Scottish Coal Tar Products

CONDITIONS in Scotland are far from satisfactory from the trader's point of view. Cresylic acid and certain grades of creosote oil which could find a ready market are extremely scarce, and, on the other hand, there are fair stocks of high boiling acid and other grades of creosote for which there is no demand. In addition, producers are unwilling to contract for next year's delivery, so that business is really very quiet.

Cresylic Acid.—Very scarce for delivery to end of year. Prices quoted are nominal. Pale, 97/99%, 1s. 11½d. to 2s. 0½d.; dark, 97/99%, 1s. 9½d. to 1s. 10½d.; pale, 99/100%, 2s. 2d. to 2s. 4d.; high boiling, 2s. to 2s. 2d.; all per gallon ex works in buyers' packages.

Carbolic Sixties.—No quantities are available for prompt delivery. Price nominal at 2s. 6d. to 2s. 8d. per gallon.

Creosote Oil.—Values are unchanged. B.E.S.A. specification 4¾d. to 5d.; gasworks ordinary, 3½d. to 3⅝d.; washed oil, 3¼d. to 3⅜d.; all per gallon, rails works, in O.T.W. (Owners' tank wagons.)

Coal Tar Pitch is still unchanged. Coke oven and horizontal, 47s. 6d. per ton, f.a.s. Glasgow; vertical, 45s. per ton, f.a.s. Glasgow.

Blast Furnace Pitch.—Fixed price remains at 30s. ex works, for home trade, and 35s. f.a.s. Glasgow for export. Packing charges extra if required.

Refined Coal Tar.—Quotations are steady, but little business is passing; 3¾d. to 4d. per gallon, ex works, naked.

Blast Furnace Tar.—Quiet at fixed price of 2¾d. per gallon, ex works.

Crude Naphtha.—Scarce, 5d. to 6d. per gallon, rails works.

Water White Products.—Less active. 90/160 solvent naphtha, 1s. 2d. to 1s. 2½d.; heavy solvent, 90/190, 1s. 0½d. to 1s. 1d.; benzol, 1s. 5½d. to 1s. 6d.; all per gallon free on rails works, in buyers' packages.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.*

Glasgow, November 13, 1929.

THE heavy chemical market has shown marked improvement during the past week, inquiry both for home and export having increased considerably. One feature of the market is the increased demand for solvents, and the possibility is that the price for this class of chemical will advance within the next month or so. In regard to heavy chemicals, prices remain practically unchanged, and the indication is that there will be little or no change during next year.

Industrial Chemicals

ACETONE, B.G.S.—£76 10s. to £85 per ton, ex wharf, according to quantity. Inquiry remains satisfactory.

ACID ACETIC.—This material is still scarce for immediate supply, but prices remain unchanged as follows: 98/100% glacial, £56 to £67 per ton, according to quality and packing, c.i.f. U.K. ports; 80% pure, £37 10s. per ton, ex wharf; 80% technical, £37 10s. per ton, ex wharf.

ACID BORIC.—Crystals, granulated or small flakes, £30 per ton. Powder, £32 per ton, packed in bags, carriage paid U.K. stations. There are a few fairly cheap offers made from the Continent.

ACID CARBOLIC, ICE CRYSTALS.—Prompt delivery difficult to obtain and prices now quoted for early delivery round about 8d. per lb., delivered or f.o.b. U.K. ports.

ACID CITRIC, B.P. CRYSTALS.—Quoted 2s. 2d. per lb., less 5%, ex store, prompt delivery. Rather cheaper offers for early delivery from the Continent.

ACID HYDROCHLORIC.—Usual steady demand. Arsenical quality, 4s. per carboy; dearsenicated quality, 5s. 6d. per carboy, ex works, full wagon loads.

ACID NITRIC, 80° QUALITY.—£24 10s. per ton, ex station, full truck loads.

ACID OXALIC, 98/100%.—On offer at about 3¾d. per lb., ex store. Offered from the Continent at 3½d. per lb., ex wharf.

ACID SULPHURIC.—£2 15s. per ton ex works for 144° quality; £5 15s. per ton for 168°. Dearsenicated quality, 20s. per ton extra.

ACID TARTARIC, B.P. CRYSTALS.—Quoted 1s. 5d. per lb., less 5%, ex wharf. On offer for prompt delivery from the Continent at 1s. 4½d. per lb., less 5%, ex wharf.

ALUMINA SULPHATE.—Quoted at round about £7 10s. per ton, ex store.

ALUM, LUMP POTASH.—Now quoted £8 7s. 6d. per ton, c.i.f. U.K. ports. Crystal meal about 2s. 6d. per ton less.

AMMONIA, ANHYDROUS.—Quoted 7½d. per lb., carriage paid. Containers extra and returnable.

AMMONIA CARBONATE.—Lump quality quoted £36 per ton, powdered £38 per ton, packed in 5 cwt. casks, delivered U.K. stations or f.o.b. U.K. ports.

AMMONIA LIQUID, 880°.—Unchanged at about 2½d. to 3d. per lb., delivered according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of British manufacture quoted £21 to £22 per ton, ex station. Fine white crystals offered from the Continent at about £17 5s. per ton, c.i.f. U.K. ports.

ANTIMONY OXIDE.—Spot material quoted £37 per ton, ex wharf. On offer for prompt shipment from China at £34 per ton, c.i.f. U.K. ports.

ARSENIC, WHITE POWDERED.—Now quoted £18 per ton, ex wharf, prompt despatch from mines. Spot material still on offer at £19 15s. per ton, ex store.

BARIUM CHLORIDE.—In good demand and price about £11 per ton, c.i.f. U.K. ports.

BLEACHING POWDER.—British manufacturers' contract price to consumers unchanged at £6 12s. 6d. per ton, delivered in minimum 4-ton lots. Continental now offered at about the same figure.

CALCIUM CHLORIDE.—Remains unchanged. British manufacturers' price £4 5s. per ton to £4 15s. per ton, according to quantity and point of delivery. Continental material on offer at £3 12s. 6d. per ton, c.i.f. U.K. ports.

COPPERAS, GREEN.—Unchanged at about £3 10s. per ton, f.o.r. works, or £4 12s. 6d. per ton f.o.b. U.K. ports.

FORMALDEHYDE, 40%.—Remains steady at about £36 10s. per ton, ex works.

GLAUBER SALTS.—English material quoted £4 10s. per ton, ex station. Continental on offer at about £3 5s. per ton, ex wharf.

LEAD, RED.—Price now £37 10s. per ton, delivered buyers' works.

LEAD, WHITE.—Quoted £37 10s. per ton, c.i.f. U.K. ports.

LEAD ACETATE.—White crystals quoted round about £39 to £40 per ton, ex wharf. Brown on offer at about £2 per ton less.

MAGNESITE, GROUND CALCINED.—Quoted £8 10s. per ton, ex store. In moderate demand.

METHYLATED SPIRIT.—Industrial quality 64 O.P. quoted 1s. 4d per gallon, less 2½%, delivered.

POTASSIUM BICHROMATE.—Quoted 4⅜d. per lb. delivered U.K. or c.i.f. Irish ports, with an allowance of 2½% for minimum 2½ tons to be taken.

POTASSIUM CARBONATE.—Spot material on offer at £26 10s. per ton ex store. Offered from the Continent at £25 5s. per ton c.i.f. U.K. ports.

POTASSIUM CHLORATE, 99¾/100% POWDER.—Quoted £25 10s. per ton ex wharf. Crystals 30s. per ton extra.

POTASSIUM NITRATE.—Refined granulated quality quoted £19 2s. 6d. per ton c.i.f. U.K. ports. Spot material on offer at about £20 10s. per ton, ex store.

POTASSIUM PERMANGANATE B.P. CRYSTALS.—Quoted 5¼d. per lb., ex wharf.

POTASSIUM PRUSSIATE (YELLOW).—Spot material quoted 7d. per lb., ex store. Offered for prompt delivery from the Continent at about 6¾d. per lb. ex wharf.

SODA, CAUSTIC.—Powdered 98/99% £17 10s. per ton in drums, £18 15s. per ton in casks. Solid 76/77% £14 10s. per ton in drums, and £14 12s. 6d. per ton for 70/75% in drums, all carriage paid buyers' stations, minimum 4-ton lots, for contracts 10s. per ton less.

SODIUM BICARBONATE.—Refined recrystallised £10 10s. per ton, ex quay or station. M.W. quality 30s. per ton less.

SODIUM BICHROMATE.—Quoted 3⅞d. per lb. delivered buyers' premises with concession for contracts.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station. Powdered or Pea quality 27s. 6d. per ton extra. Light soda ash £7 1s. 3d. per ton ex quay, minimum 4-ton lots with various reductions for contracts

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £8 17s. 6d. per ton, ex station, minimum 4-ton lots. Pea crystals on offer at £14 15s. per ton, ex station, minimum 4-ton lots. Prices for this year unchanged.

SODIUM NITRATE.—Chilean producers are now offering at £9 9s. per ton, carriage paid buyers' sidings, minimum 6-ton lots, but demand in the meantime is small.

SODIUM PRUSSIATE.—Quoted 5¼d. per lb., ex store. On offer at 5d. per lb., ex wharf to come forward.

SODIUM SULPHATE (SALTCAKE).—Prices 50s. per ton, ex works, 52s. 6d. per ton, delivered for unground quality. Ground quality 2s. 6d. per ton extra.

SODIUM SULPHIDE.—Prices for home consumption. Solid 60/62% £9 per ton. Broken 60/63% £10 per ton. Crystals 30/32% £7 2s. 6d. per ton delivered buyers' works on contract, minimum 4-ton lots. Special prices for some consumers. Spot material 5s. per ton extra.

SULPHUR.—Flowers, £12 per ton; roll, £10 10s. per ton: rock, £10 7s. 6d. per ton; ground American, £9 5s. per ton; ex store.

ZINC CHLORIDE, 98%.—British material now offered at round about £20 per ton, f.o.b. U.K. ports.

ZINC SULPHATE.—Quoted £10 per ton, ex wharf.

NOTE.—Please note that the above prices are for bulk business and are not to be taken as applicable to small parcels.

Certificates from Public Analysts

IN a case heard recently, a discussion arose as to whether the certificate of a public analyst on which a prosecution is based is acceptable in court when the public analyst's assistant has performed the actual analysis, and the public analyst himself has interpreted the results and signed the certificate. The certificate related to a sample of milk, and the assistant, who did not possess the qualifications required by the Ministry of Health for the position of public analyst, gave evidence that he had performed the analysis. For the defence, it was contended that the analysis should be made by the public analyst himself. For the prosecution, it was held that the assistant was qualified by experience to do the work, and that the public analyst was satisfied that it was in order. The defendant admitted that the deficiency in the milk was accounted for by the fact that during the week in question the cows had been without cake; the milk returned to normal quality when the cows were again supplied with cake. The Magistrates dismissed the case. It may be noted that in Bell's *Sale of Food and Drugs Act* (seventh edition, 1923), a statement is made that the analyst need not make the analysis personally but may do so through his assistants. (*Bakewell* v. *Davis*, 1894, Q.V. 296.)

Manchester Chemical Market

(From Our Own Correspondent.)

Manchester, November 14, 1929.

A moderate volume of business has been put through on the chemical market here during the past week so far as actual new sales are concerned, with contract deliveries of the main lines still fairly satisfactory in view of prevailing conditions in the textile finishing trades. Except for occasional weakness, quotations are reasonably steady, with the trade looking forward with growing interest to the new contract prices for delivery during the coming year. Within the next few weeks, a minor flood of these will be issued.

Heavy Chemicals

A fair business is passing in the case of bichromate of soda, current offers of which both for prompt and forward delivery are on the basis of 3⅝d. per lb., less discounts for quantities. Bicarbonate of soda is a firm section at round £10 10s. per ton, and a moderate amount of buying interest is being shown. With regard to prussiate of soda, values keep up at from 4¾d. to 5¼d. per lb., according to quantity, and sales of this are about up to their recent level. Chlorate of soda during the past week has been rather inactive, with prices in the neighbourhood of 2⅝d. per lb. A quietly steady business is passing in caustic soda, quotations for which are firm at from £12 15s. to £14 per ton, in contracts, and according to grade. There has been little change in the position of sulphide of sodium, which is on offer at round £9 5s. per ton for the 60–65 per cent. concentrated solid quality and £8 for the commercial. A fair demand is reported in the case of alkali at about £6 per ton in contracts. Saltcake is fairly steady at round £3 per ton, with inquiry for this material on moderate lines. There has been only a quiet trade in hyposulphite of soda, offers of which are now at about £15 5s. per ton for the photographic grade and from £9 to £9 5s. for the commercial. Phosphate of soda is on the quiet side, and values are slightly easier at round £11 per ton for dibasic.

Yellow prussiate of potash meets with a fair amount of inquiry at from 6¾d. to 7¼d. per lb., according to quantity. Permanganate of potash is still a fairly steady section of the market at about 5½d. per lb. for the B.P. quality and 5¼d. for the commercial, although no great weight of business is being done in this material. Caustic potash is selling in moderate quantities, and values are maintained at round £32 10s. per ton. Chlorate of potash is not particularly active, but at about 2⅞d. per lb. offers show little change on the week. Bichromate of potash is firm on the basis of 4⅜d. per lb., and a quietly steady trade is reported. With regard to carbonate of potash there has been some inquiry about in this section with current offers ranging from about £25 to £25 10s. per ton for the 96–98 per cent. quality.

Sulphate of copper has been by no means active during the past week and the price outlook, owing to the decline in the metal, is not too certain; to-day's values are at £26 10s. to £27 10s. per ton, f.o.b., according to position. The call for arsenic is very moderate still, but prices keep up at from £16 per ton at the mines for white powdered, Cornish makes. The acetates of lime are not too strong at the moment, brown being quoted at from £7 15s. to £8 per ton and grey at round £16 5s. The lead products are easy in tendency in sympathy with the metal, white acetate being on offer at from £39 10s. to £40 per ton, and brown at about £39, with nitrate of lead at down to £33.

Acids and Tar Products

Citric acid has met with a quiet demand, with current offers at about 2s. per lb., whilst tartaric appears to be easy in tendency at round 1s. 4¼d. There is a fair amount of inquiry in circulation in the case of oxalic acid, and values are steady at £1 13s. per cwt., ex store. Acetic acid is well held and meets with a steady demand at about £36 10s. per ton for the 80 per cent. commercial quality and £66 for the glacial.

Creosote oil is rather steadier at from 4¼d. to 4⅜d. per gallon, at works, with a moderate business going through. Pitch has been about maintained at round 47s. 6d. per ton, f.o.b. Carbolic acid is still a firm section, and a steady trade is reported about 2s. 6d. per gallon for 60's crude, and 10d. per lb. for crystals in secondhands. Solvent naphtha is about unchanged at 1s. 2½d. per gallon, naked, a moderate inquiry being reported.

Company News

Angela Nitrate Co.—An interim dividend of 10 per cent. is announced, payable on November 23.

Fuller's Earth Union.—An interim dividend of 8 per cent. per annum, less income tax, is announced on the ordinary shares for the half-year, payable on November 16.

Santa Catalena Nitrate Co.—A loss is reported for the year to June 30 last of £516, against a profit for the previous year of £1,675. The sum of £1,500 has been transferred from reserve, and after charging £1,721 for stoppage expenses, the credit balance brought in is reduced to £337.

British Cyanides Co.—The net profits for the year to June 30 show an increase of £5,578 at £10,025; and a credit balance of £1,850 brought in (against the debit of £946). The preference dividend has again been paid, and £10,292 carried forward. (Last ordinary dividend, 5 per cent. for 1920–21.) Full statement as to the year's progress will be made at the meeting.

Langdale's Chemical Manure Co.—The report for the year ended September 30 last shows a loss of £369, to which is added loss brought forward from last year of £2,834, making a total loss to be carried forward of £3,203. Total sales during year show a substantial increase, but, as the hope that the foreign competition would be abated was not realised, no advance in prices was obtained.

Anglo-French Phosphate Co.—The report for the year ended December 31, 1928, states that extended operations resulted in a net profit of £31,742. Including £14,526 brought forward, credit of profit and loss account was £46,268. The directors recommend placing to reserve fund £10,000, a dividend of 12 per cent. for the year £22,500, and a bonus of 5 per cent. £9,375, leaving to be carried forward £4,393. (Former year: Amount brought in £13,313, net profit £16,213; dividend 8 per cent.)

International Nickel Co. of Canada.—The consolidated general profit and loss statement of the company and its subsidiaries for the three months ended September 30 last show that the net profit was $5,627,579, in contrast with $5,647,985 for the previous quarter and $5,590,191 for the first three months of that year. Common stock dividend for the latest period amounted to $3,438,069, against $2,750,116 for the June and $2,749,147 for the March quarter. The increased payment involved a reduction in the undivided balance, but the earned surplus now reached $23,509,590. There is, in addition, a capital surplus of $48,350,737.

Eastern Chemical Co.—The result of the year's working to March 31, 1929, after maintaining plant in a high state of efficiency, the cost of which has been charged to revenue, but without allowing anything for depreciation, was a loss of £330. The directors do not consider it necessary to pass anything to depreciation reserve this year, as revaluation figures referred to in last report, after revision show that present value of land, buildings and plant is appreciably higher than book value less sum standing at depreciation reserve. The directors have decided not to write off surplus reserve at present, but to carry it forward. Results of past year have been adversely affected by unsettled state of cotton industry in India and long periods during which Bombay cotton mill operatives were on strike, and also by severe competition of imported acids.

Merchandise Marks Inquiries

Wall Board, Gypsum, and Photographic Materials

The Board of Trade have referred to the Standing Committee applications for Orders-in-Council to require the marking with an indication of origin of imported wall board, gypsum, and photographic plates, films, and paper. The Committee will consider whether these articles should be marked on sale or exposure for sale, and they may, at their discretion, also consider whether the articles should be marked on importation. The dates of the Committee's public inquiries will be announced later, and communications should be addressed to the Secretary, Mr. E. W. Reardon, New Public Offices, Great George Street, London, S.W.1, as early as possible, and, in any case, not later than December 13. The references are being published in full in the *Board of Trade Journal* of November 14, and in the London, Edinburgh and Belfast *Gazettes* of November 15.

THE PREMIER PASTE MILL

PROCESSES.

Printing Inks
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Leather Dressings
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Inks and Lacquers
Mayonnaise and Sauces
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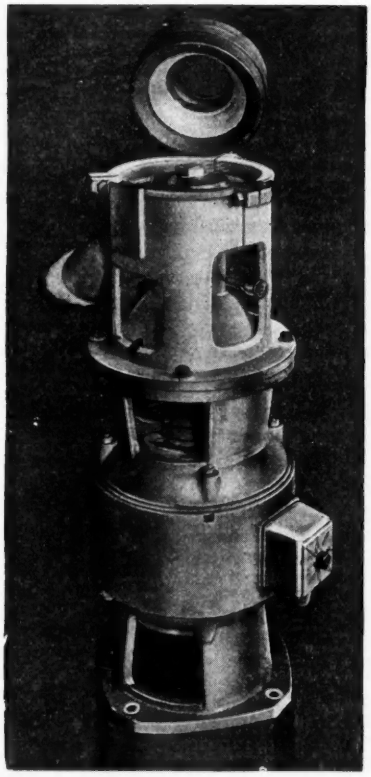
Shaving Creams, etc.



FEATURES.

Low Power Consumption
All Contact Parts Fescolised Nickel
Adjustable while running
Direct Drive
Floor space 2 sq. ft.
Instantly Accessible for cleaning.

THIS Mill—the latest development of the Premier Colloid Mill—has been specially designed to handle viscous fluids and pastes with the greatest ease.

The Premier Paste Mill incorporates many improvements of which progressive manufacturers will be quick to take advantage.

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Indicators and their Applications

A Paper by Dr. E. B. R. Prideaux

DR. E. B. R. PRIDEAUX, of University College, Nottingham, read a paper entitled "Indicators and Their Applications" before the Faculty of Technology Chemical Society of the University of Manchester on Thursday, November 7.

Indicators, said Dr. Prideaux, may be defined as dyestuffs, the tautomeric changes of which are very sensitive to changes of acidity and alkalinity. This sensitivity is conferred by the possession of basic and acidic groups, according to the strengths of which the compounds show their colour changes in acid, neutral or alkaline solutions. Every small interval of acidity, etc., over the useful range is catered for by one or more of the great variety of available indicators. Universal or mixed indicators are useful for sorting tests, and may belong to the rainbow type, in which the spectral colours from red to violet are traversed as the reaction changes from acid to alkaline. The sulphonphthalein type introduced by Clark and Lubs and others usually change from yellow (acid) to some vivid bright colour on the less acid side.

The electronic formulæ of the phthalein, sulphonphthalein crystal violet, and azo types were illustrated by slides. The last class are mostly ampholytes, the combinations of which with acids and alkalies can now be explained by Bjerrum's theory. The absorption of light was demonstrated, and slides of absorption spectra were discussed with reference to the accurate determination of pH by measurement of the increase or decrease in the extinction coefficient of spectral lines.

The use of indicators in testing milk, bread, eggs, and soils, and in the preparation of casein, was then described. It was also shown how the results of pH determinations could to some extent explain the dyeing of textiles.

The Union Chimique Belge

THE Union Chimique Belge, the Belgian chemical combine, is steadily extending. From time to time notes have appeared in this journal on the subject. These may be amplified by the following list of companies merged in the Union recently by exchange of stock:—Société Ostendaise Lumière et Force Motrice, S.A. (electricity, gas coke by-products); Société Anonyme Franco-Belge Nadox (photographic paper and plates); Nouvelles Industries Chimiques, S.A. (nitrogen, distillery by-products); Société Anonyme de Produits Refractaires de Saint Ghislain (refractories); Cie. Belge des Produits Chimiques de Schoonaerde, S.A. (coal tar derivatives); Cie. Progil Belge et Extraits Tennants de Colorants d'Hemixen, S.A. (tanning extracts); Société Anonyme Cuivre, Métaux et Produits Chimiques d'Hemixem (sulphuric acid, 60,000 tons per annum); and La Mutuelle Solway and the Société Générale de Belgique and subsidiaries (heavy chemicals, chain drug stores). To complete the necessary financing an increase of the Union's capital from 175,000,000 to 192,000,000 shares of a nominal value of 500 francs each is in project.

Public Works, Roads and Transport Exhibition

THE Public Works, Roads, and Transport Congress and Exhibition opens at the Royal Agricultural Hall, London, N., on Monday, and will remain open from 10 a.m. to 7 p.m. each day up to and including Saturday, November 23. Amongst the exhibitors are Bell Brothers (Manchester, 1927), Ltd. Among their exhibits are the following: (1) A model of a standard 8 ft. diameter vertical type pressure filter, complete with valves, piping, platform and gearing. A section of the filter shell is cut away so as to present a view of the internal arrangement; (2) A model of a "BA" vertical type pressure filter. This model depicts the type of plant put forward where the question of space is an important feature of the plant; (3) A base exchange water softener. This is a natural softener as supplied for the treatment of small water supplies for houses; (4) The Bell gas chlorinating apparatus. This is the latest addition to the range of manufactures of this firm. In addition to the above major exhibits, there will be a representative range of the various smaller parts of the filters, such as strainers, bearings, back pressure valves, etc., and also samples of the specially graded filtering medium used in the filters, and in addition numerous photographs of plants installed by this firm for municipal corporations and industrial concerns.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

Mortgages and Charges

*[NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case, the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.]*

SOUTHERN SILICA, LTD., Melksham. (M., 16/11/29.) Registered October 31, £500 debentures, part of £15,000; general charge. *£2,400. December 31, 1928.

STANDARD SOAP CO., LTD., London, W. (M., 16/11/29.) Registered October 31, £10,000 debentures, to Mosley Street Nominees, Ltd., 38, Mosley Street, Manchester; general charge.

London Gazette, &c.

Application for Discharge

WHIPMAN, Philip, lately St. Dunstan's House, 8, Cross Lane, London, E.C.3, and 6, Baker's Row, Farringdon Road, London, E.C.1, drug merchant. (A.F.D., 16/11/29.) Hearing, December 3, 11 a.m., Bankruptcy Buildings, Carey Street, London, W.C.2.

New Companies Registered

JOHN B. JOHNSON AND CO. (REFINERY ENGINEERS), LTD., Windsor House, Victoria Street, London, S.W.1.—Registered November 6. Nominal capital, £5,100 in 5,000 7 per cent. non-cumulative preference shares of £1 each and 1,000 ordinary shares of 2s. each. Consulting and chemical engineers, and petroleum and fuel technologists; to undertake advisory and research work appertaining to any chemical, electrical or engineering processes; to design and erect chemical or electrical plant, etc. Directors: H. Moore and J. B. Johnson.

The Vauquelin Centenary

ON November 5 occurred the centenary of the death of the French chemist, Louis Nicolas Vauquelin, whose name is associated with the discovery of chromium and beryllium, two of the twenty-eight elements discovered during the eighteenth centurt. A note in *Nature* states that though less well known than his great contemporaries Guyton de Morveau, Berthollet, Lavoisier, Fourcroy and Chaptal, Vauquelin attained a distinguished position among French chemists and held many important positions. His principal work, however, was done in his laboratory, where he carried out a very large number of analyses. The discovery of chromium was made in 1797, that of beryllium, formerly called glucinum, in 1798. Vauquelin was the son of a farm labourer in the village of Saint-André-des-Berteaux, where he was born on May 16, 1763, and his boyhood was one of hardship. At the age of fourteen he found employment with a chemist at Rouen, from whence he went to Paris, where, after suffering illness and destitution, he was befriended by a pharmacist named Chéradame, who later on introduced him to Fourcroy, whose assistant, collaborator and friend Vauquelin became. Altogether, Vauquelin was partly or solely responsible for some three to four hundred scientific papers, mostly devoted to analyses. In a short review of his work, Sir Edward Thorpe said, "He described a method of separating the platinum metals, and worked upon iridium and osmium. He investigated the hyposulphites, cyanates and malates. He discovered the presence of benzoic acid in the urine of animals; with Robiquet he first isolated asparagin; with Buniva, allantoic acid; and with Bouillon de la Grange, camphoric acid." Vauquelin died in his native district at the Château des Berteaux.